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COMMUNICATIONS

ANTERIOR DIALYSIS OF THE RETINA: DISINSERTION OR AVULSION AT THE ORA SERRATA

BY

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PART II

Spontaneous Dialysis

Leber stated that he found spontaneous anterior avulsions quite frequently. Nordenson (1887) in his book discusses fully the retinal ruptures in the Göttingen clinic. Amongst 45 cases in which a tear was found, in seven there was a large rent in front of the equator. Deutschmann (1899) claimed that spontaneous dialysis was a common occurrence and more frequently seen than a tear in the retina itself, "die Risse in der Kontinuität." "The more attention one pays to this lesion the more frequently one finds it and is astonished at the great number of cases in which it is observed." Deutschmann found avulsions regularly at the lower retinal border, never above, while tears elsewhere were usually in the upper half. Leber endorsed these findings.

An anterior retinal dialysis may be accidentally found during the routine examination of the periphery of an eye which has produced no symptoms of disorder. Particularly is this apt to

be so if the fellow eye is or has been affected by a dialysis. The following history illustrates this point:—

J. B. was aged 29 years when he first noticed a film over the right eye and a defect in the superior nasal field. Lamp posts appeared distorted and certain objects appeared magnified. His field loss increased but his oculists advised against operation. When he was 14 years old his nose had been broken in one of many fights. He played football till he was 21 years of age. He consulted me five years later. An almost complete detachment was found with a typical large dialysis in the inferior temporal quadrant. He noticed that small illuminated spots moved across his right field from time to time. This symptom is relatively common amongst patients with detachments. Examination of the left eye, which appeared normal to the patient, revealed a most unusual lesion. An irregular band, grey in colour and somewhat translucent, was found in the inferior temporal quadrant. It ran from 3 to 7 o'clock. It was in focus with + 6·0 D. lens and the retina on each side of it with – 3·0 D. lens. At first it was considered to be the edge of a dialysis, but it was found that the fine peripheral retinal vessels ran deep to it. It disappeared in the vicinity of the ora serrata at its extremities and did not reach the retina posteriorly. Its most central portion was 4 D. D. from the the ora serrata. Diffuse pigmentation was present in the retina close to its lower extremity. Peripheral to it was a typical small dialysis which extended from 4 to 6 o'clock. At no point was the margin of this dialysis more than 1 D. D. from the visible limits of the fundus. Neither of these lesions produced a defect in the field to a 1 mm. white test object. The nature of the former is unexplained.

The latency and the bilateral occurrence of retinal dialyses are features which will probably grow in importance with further clinical examination.

For a long time oculists have been familiar with choroidal warts and with scattered areas of fine pigment and small foci of retino-choroidal atrophy in the periphery of fundi, particularly in middle and old age. Gonin's and Vogt's researches have re-awakened interest in the periphery of the retina. This has produced amongst other things a realisation of the frequency of anterior retinal dialysis—another point realised by the careful investigators of fifty years ago, but apt to be forgotten in the days of complex apparatus, and quick work.

Leber stated that he had seen eight cases of spontaneous anterior dialysis and six associated with trauma. Gonin described and illustrated retinal "désinsertions" in the French Encyclopaedia of Ophthalmology (1906), and in 1920. He summarized the characteristics of the condition in 1930 (*a*) The prolonged disappearance of this condition from the literature makes retinal dialysis the Rip van Winkle of ophthalmology.

Fundus of Mr. J. B., showing a smalllatent dialysis and detachment, and a most unusual band of semi-opaque tissue in the anterior part of the vitreous. A small melanoma of the choroid is present below the macula. The other eye presented a complete detachment and an extensive dialysis.

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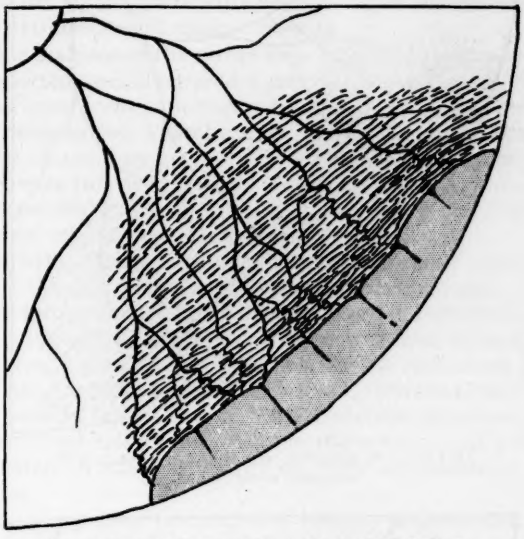
It has been seen that an anterior dialysis when secondary to cyclitis is usually due to traction from in front and medially. The appearance of a spontaneous dialysis, especially when arcade-like,



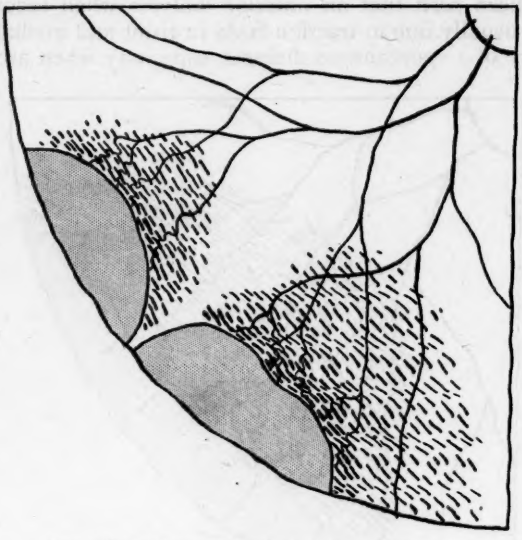
Arcade-like or festooned anterior retinal dialysis.

gives the impression of traction from behind. In the absence of a visible mechanism that could produce posterior traction, one concludes that some cause such as cystoid degeneration, traumatic cyclitis, direct trauma or a broad and firm vitreous base, separates the retina from the pars ciliaris retinae and so produces dialysis, and that the retinal vessels then draw the retina backwards.

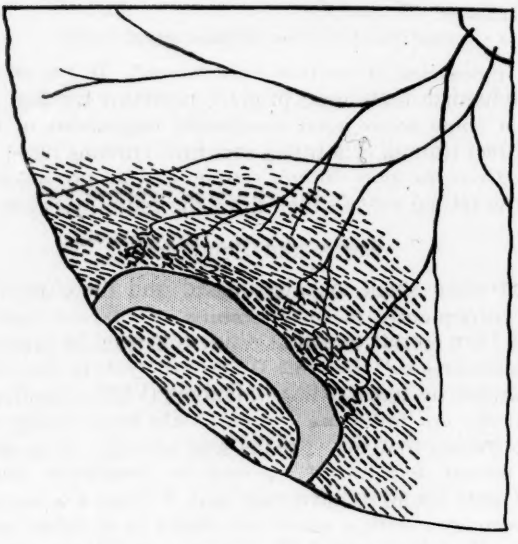
Signs and Symptoms

Dialyses when small may be missed and therefore they have appeared infrequently in the literature. "Un petit repli rétinien parallèle à l'ora serrata m'a plus d'une fois trahi la presence d'une minime désinsertion." (Gonin.) When a dialysis is due to trauma it may be hidden by haemorrhage. Dubois (1929) considered that a rupture at the ora following trauma could heal rapidly and completely, provided that the vitreous was normal. In a series of 49 cases of retinal detachment reported by Jeandelize and Baudot (1931), 37 were found to have tears and of these 4 were dialyses.

Only perimetry with a small test object is of value because the field is usually full to one of 5°. Lagrange (1931) assumed that in a certain patient no dialysis was present because the field though



Two adjacent anterior retinal dialyses, each with separate detachment.



Anterior retinal dialysis with peripheral tongue—"à lambeau." Gonin.

restricted to a dull white stimulus was full to a 1·5 mm. luminous object. It is doubtful if one is justified in such an assumption unless the angle subtended by the object is minute. Reference to certain of the fields published with this paper will demonstrate the value of perimetry with minute objects.

Anterior dialyses of the retina may vary greatly in size. Arruga (1929) reported and illustrated a double "désinsertion" in one eye and an unusual form which showed a tongue and was crescentic in shape, "désinsertion à lambeau." Gonin has found that dialyses tend to be situated symmetrically when bilateral. Amongst his 25 cases, six were bilateral. In Shapland's series of 37 patients, three had bilateral dialyses and in one eye there were two dialyses each with its own separate detachment.

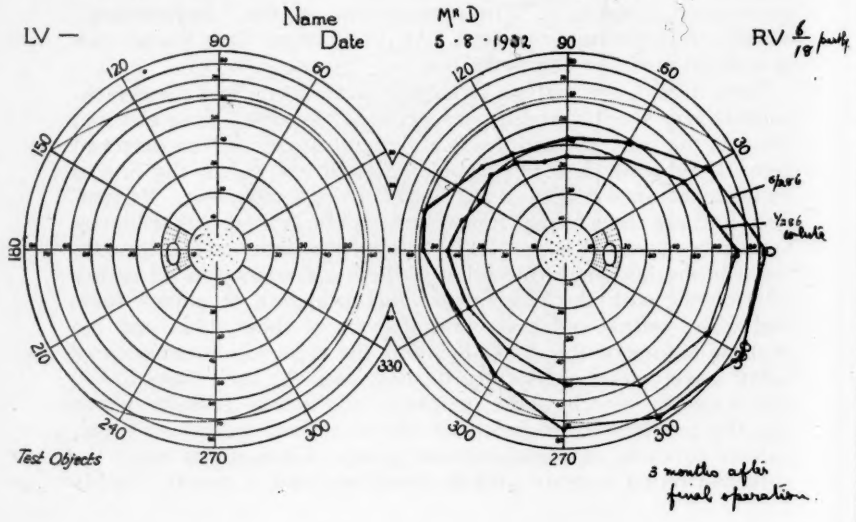
Juler (1931) reported a male patient, aged 27 years, with a dialysis of the right eye of eighteen month's duration, and a symmetrically situated dialysis in the left eye of 6 month's duration. A single puncture of each eye at 6 o'clock, 9 mm. from the limbus, led to re-attachment. Seven months later the vision was R.=6/24, L.=6/5 and the retinae were firmly fixed. Parsons (1917) reported a female patient, aged 17 years, with a bilateral detachment. In one eye the temporal half and in the other the inferior half was affected. He suggested an advanced stage of cystic degeneration as a probable cause.

As a rule the patient complains of blurred vision which commenced in one corner of the visual field. Usually the superior nasal quadrant is the first area to be affected. Most patients have observed floating dark spots before the eye for some time prior to the appearance of the mist. The vitreous towards the "désinsertion" usually shows minute opacities. At times larger dark masses run in a radial direction across the tear.

Even though the dialysis is large the central part of the detachment is very shallow and it very gradually becomes more elevated towards the tear. Sometimes it is difficult to delimit the detached area. If however a clear choroidal pattern is present, the line of its disappearance will show the limits of the detachment. Particularly in those cases in which the tear is below is there this tendency to a very gradual slope. More often when the tear originates towards the horizontal meridian is there a tendency to an earlier interference with the macula and the formation of abrupt folds and white retinal reflexes. The absence of these folds and the shallow nature of the detachment in the type which commences below have caused a difficulty in diagnosis. In such cases in the past a careful search of the periphery might have revealed a tear and the provisional diagnosis of central retinal oedema or tuberculosis or even choroidal tumour upset. Close to its edge the detached retina appears grayish in colour, and it mounts steeply

by a series of small folds made clear by the marked tortuosity of the overlying vessels. The edge of the retina varies in appearance according to the mode of illumination. While clearly focused in a convergent beam it is white, in less intense light or if seen by reflected light it may appear dark. The edge often appears slightly rolled over towards the vitreous and therefore looks broad. At times fine tags—of varying length—run forwards from it. One finds in some cases especially towards the extremities of the tear, the ends of other tags which run from in front towards the posterior edge. When tags are complete the direction of the retinal edge may be altered so that an arcade-like appearance is produced. These tags, when wide and flat, may appear of the same colour as the retina, as a rule, however, they are dark and black. If these tags are complete the appearance suggests that more than one dialysis is present. Deutschmann referred to incomplete and arcade-shaped dialysis as well as to retinal shreds suspended in the periphery. Gonin (1906) also recorded instances of an arcade-like appearance. The anterior end of the retina appeared to be drawn posteriorly in places like a curtain. Such an appearance was found in the following case and is illustrated in Plate 2.

Mr. D. The patient, an emmetrope, aged 23 years, for at least three months had noticed a blur over the nasal field of the right eye. He was kindly referred to me by Dr. Hogg, of Tasmania. He had received conservative treatment for a period of six weeks. He appeared to be in perfect health and had had no illnesses. Ten years previously he had been struck above this eye



Mr. L. Representation of retinal detachment and extensive anterior retinal dialysis. Re-attachment followed one operation. Plan of operation. Fields of same (see p. 718).

Mr. D. Anterior retinal arcade-like dialysis. Stereophotographs of retinal detachment (see Plate).

Coloured Drawings by Miss Margaret Fox, Melbourne.

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by a stick thrown as a spear but he attributed no visual loss to this or any other injury. He had not observed any spots before his eyes. He had a very extensive detachment of the temporal and lower retina of the right eye. It was divided by deep clefts and along the abruptly sloping margins the retina showed broad white bands. An anterior dialysis extended from 7·30 to 10·15 o'clock. The margin of this rent was irregular and many tags, some of which appeared red and transparent, ran from it towards the periphery. Ends of other tags appeared, as if they came from the anterior margin of the dialysis, and ran posteriorly. His vision was reduced to counting fingers at several feet and only his temporal field of vision remained. At operation two cautery punctures were made and the retina became completely re-attached. Two weeks later however, a small detachment was found towards 11 o'clock. This disappeared when the eye was tied up and it was found that small patches of pigment were present where the retina had re-attached above and below. Later the lower retina detached and though no new rent was visible punctures were made just above and below the original limits of the dialysis. The retina appeared to go back into position but two weeks later it was detached again and it was interesting to observe that the original white retinal folds had returned. A third operation was done at which the surface of the sclera just behind the ora serrata from 9 to 11 o'clock was touched with the cautery and punctured at two points. Immediately after the operation the detachment in this vicinity was much flatter but still present. In the extreme periphery one was able to obtain a very clear view of the ends of the ciliary processes but the anterior margin of the dialysis could not be seen. If this operation had failed to re-attach the upper retina a similar method would have been adopted in dealing with the lower area of detachment. However, the retina completely re-attached and three months later the vision was 6/18 partly and the fields as shown.

I have not been able to see the anterior margin of a dialysis. In none of my cases could any sign of choroidal disorders be seen, though the pattern of the exposed choroid could be clearly focused in the younger patients.

The separated retina may be so displaced that it may obscure the disc and reveal its external surface to the observer. Baquis (1896), Scheffels (1891), Constentin (1904), Ballantyne, Juler and Goulden (1931) observed this. When this occurs the retinal vessels are not distinctly seen.

Monocular Diplopia

Such an extensive dialysis of the retina may lead to a very interesting form of monocular diplopia. It appears to be very uncommon. Leber refers to two cases and I have found no other

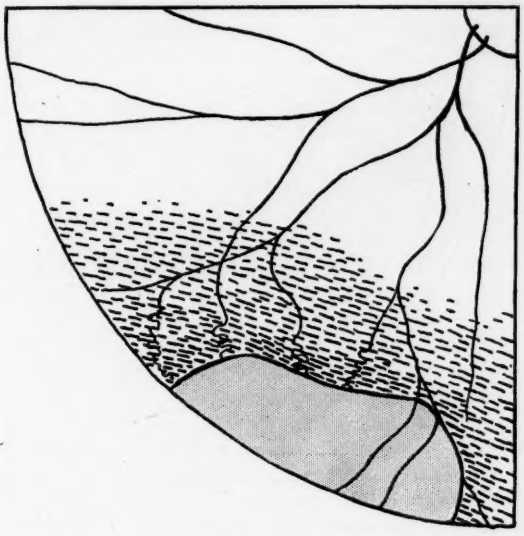
cases in the literature. The detached retina becomes folded over the intact retina and the layer of rods and cones of the former is exposed. The image due to stimulation of this layer is projected as if it was still lying on the choroid and therefore it is inverted. In Baquis' patient (1896) objects on the right were projected to the left and a wheel turning in one direction would appear to rotate in the opposite. In Constentin's patient (1904) the upper retina was superimposed on the lower and a false image was seen below the true one especially when the test object was 30° above the horizontal plane. If the object was moved vertically the false image moved in the opposite direction. The lower the object, the less this became until at last the images coincided. The diplopia lasted for several days, disappearing when the detachment became total. At first in Baquis' patient only the retina which was uncovered by the displaced portion appeared to function. Six months later however, the displaced portion became capable of indistinct vision. When the test object was in a certain position both it and the underlying portion were stimulated. The resulting diplopia could be elicited for three months when a cataract rendered the vision too defective. It is worthy of note that the retina retained partial vision for so long when separated from the pigmented epithelium. Leber (1916*g*).

SECONDARY DIALYSIS

There appears to be a type of dialysis which may follow either cauterisation or the contraction of a non-operative retino-choroidal focus. Rubbrecht reported that he found a dialysis in a highly myopic man soon after cauterisation of an isolated retinal tear. Schoenberg, after an ignipuncture of the inferior half of the globe, found a dialysis in the superior temporal quadrant in a man, aged 33 years. He also reported a girl, aged 12 years, with rapidly progressive myopia who developed in the superior temporal quadrant a dialysis which extended whilst under observation. It was a degenerate eye that collapsed and developed a deep cloud in the vitreous after a single puncture. Gonin reported a woman, aged 35 years, with an inferior temporal dialysis who had had a macular choroiditis a year before. He also reported a non-myopic young man, who, after four punctures made to create a barrier for a dialysis, developed retinal folds, one of which extended from the inferior nasal sector to the superior temporal periphery. In the latter area a large detachment appeared, and a new tear developed close to and parallel with the ora serrata. Gonin classes it as an example of a serious type of secondary tear that is produced by extreme retinal tension and counter-traction of the vitreous. Gonin also reported a highly myopic girl, aged 12 years, who developed a dialysis in the inferior half of one eye 3 years after two punctures

had been made to close a small tear in the inferior temporal periphery. Shapland, amongst 11 cases of relapse after treatment for detachment, found one with a large secondary dialysis at a point remote from the original hole. A further series of four punctures failed to close it.

The characteristics of the incidence of anterior dialysis do not apply to this group. In this small series three are female and the



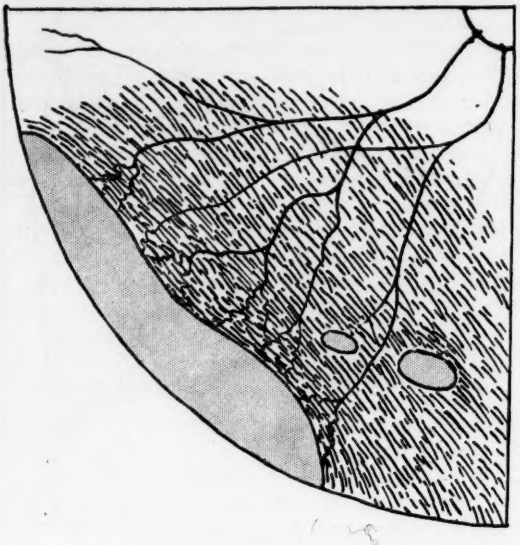
Secondary anterior retinal dialysis crossed by two fine vessels.

superior half of the globe is affected in three. I have only observed this condition twice; each patient was highly myopic and the margin of the dialysis in one was torn and irregular. In both, the dialysis was found diametrically opposite the original puncture.

The following is a brief history of one of these patients:—

This patient was kindly referred to me by Dr. F. Newman of Melbourne. She was a myope, aged 60 years. Six years earlier the right retina had become detached and after 18 months' time the vision was perception of light and opaque media hid the fundus from view. Three weeks before I saw her, objects in the left inferior temporal quadrant were found to be blurred. Central vision with correction −2·5 D. sph., −1·0 D. cyl. = 6/9. An extensive detachment was found of the nasal and inferior areas of the retina. After two days the temporal area became involved. The lens showed

extensive peripheral opacities and the vitreous contained a few coarse opacities and many fine ones. A zone of very fine black vitreous dots was found in the anterior portion of the vitreous. The clearness of the posterior vitreous suggested that it was replaced by fluid. Two small oval holes were found in the superior nasal quadrant, lying on a very sloped surface. They were situated at 10·45 o'clock and were 2·75 D. D. from the ora serrata. The larger



Anterior retinal dialysis and two oval holes in associated retinal detachment.

hole was 1/4 D. D. in length. The detachment was least marked in the vicinity of the tears and most marked below where it was globular. A band of pigment lay close to the larger hole. At operation after the usual preparation, a stud was passed into the scleral wound and it was found to lie close to the larger hole. Cauterisation was done at this site. There was a very marked reaction, even the lids becoming oedematous. One month later the retina was found to be in position except in the temporal periphery. Many searches for another hole were made in the superior temporal quadrant, but the lens opacities greatly obstructed one's view. After two months the patient was allowed out of bed and once the erect posture was assumed, fluid collected below. At last in this area one found an extensive secondary dialysis. It extended from 6·30 to the neighbourhood of 5 o'clock but its temporal limit was obscured by lens

opacities. The margin of the dialysis was in focus with +6·0 D. and it appeared to be 2·0 D. D. from the "ora serrata." As it lay close to the insertion of the inferior rectus muscle the tendon was divided and a cauterisation 5 mm. in width was made 9 mm. from the limbus. The lower retina returned to its normal position. However, the temporal retina remained detached and it was decided to cauterise part of the surface of the globe in the superior temporal quadrant and to make two punctures. This was done but unfortunately the lower temporal retina did not re-attach.

In reviewing this patient's history one considers that the delay between the operations was too long. If the retina does not re-attach during the first two or three weeks after operating, nothing is gained by keeping the patient in bed, for as soon as the patient gets up the fluid will descend again. It is wiser to allow the patient up and search for the remaining hole. This patient described the frequent appearance of numerous bright objects which appeared in one part of the visual field and always moved along the same course. This suggested some form of retinal irritation in the superior temporal quadrant but no adequate cause could be found.

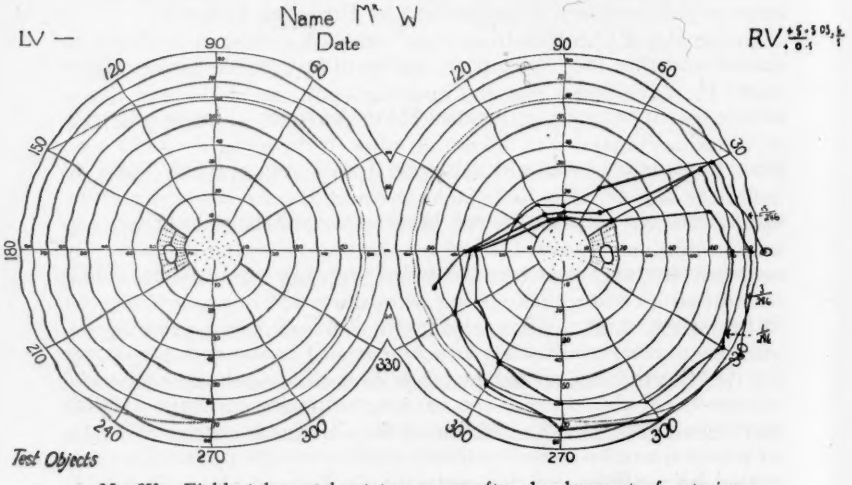
Prognosis

Amsler (1931) when referring to retinal "désinsertions" wrote "In my four cases I have had quite bad results so that probably in similar detachments appearing below or temporally in youthful non-myopic patients I shall not use the cautery, even though I know of favourable results obtained by Professor Gonin."

Gonin stated that "désinsertions" showed a marked tendency to spread and that they were particularly unfavourable for operative cure. He considered that the opening could not be closed like a simple tear by cautery puncture. He endeavours to make a barrier of adhesions posterior to the retinal edge. If the margin was 11 mm. from the limbus he would cauterise 1 or 2 mm. further back, to avoid the fragile retinal edge. As the new attachment is not at the ora serrata the retina may not become accurately re-attached and small folds may result. If the macula is not re-applied perfectly metamorphopsia and even impaired vision may result. Gonin (1932) found that secondary tears were particularly apt to occur along the cauterisation scars. This is due to the firm attachment of the vitreous to the retina. This attachment also explains the tendency for detachments to appear at other sites after such an operation, especially if the dialysis is of long duration. Gonin (1931*b*) describes a generalised retraction of the vitreous as another difficulty which is apt to be associated with a dialysis. Its presence is suggested by a diffuse opacity and a particular and rigid disposition of the retinal folds. He reports such an occurrence. In a patient

with a detachment which had recurred twice after operations for a large dialysis I was struck with the accuracy with which the main white retinal folds resumed their former position. Gonin (1931*a*) writes that amongst his series of 118 cured retinal detachments, 153 tears were closed by 197 cautery punctures. 11 "désinsertions" are included and as 27 punctures were required for these the number of interventions necessary for this form of tear is relatively high. He has only twice operated more than four times on one eye. In each of these a dialysis was present in a young man and each had six operations. There appears to be a definite tendency for detachments due to an inferior dialysis to become stationary. They spontaneously develop a pigmented band of retino-choroidal adhesions. I share with Gonin the experience of refusing operation in such a case without regret. Detachments due to temporal dialyses however tend to advance more quickly. Gonin found the latter type to be more common in older patients. This incidence naturally influences the prognosis. The slow development of an anterior retinal dialysis is illustrated by the following history :—

W. W. was a railway employee who, when aged 32 years, noticed "something strange" about the right eye. A few weeks later he detected a "film" in the superior nasal field. This was variable in extent and degree but it gradually increased. I examined him 18 months later and found an extensive detachment in the inferior temporal quadrant. Peripherally a large dialysis was found which extended from 5 to 8 o'clock. Numerous pigment areas were



Mr. W. Fields taken at least two years after development of anterior retinal dialysis to show the occasional slow progress.

present in an intermediate zone between the detached and the normal zones. These areas resembled those found after spontaneous re-attachment. The areas became more profuse towards the edge of the detachment. The vision was 6/5 after the correction of 5·5 D. of hypermetropia and 0·5 D. of astigmatism. The field of vision was as illustrated. This case demonstrates the little interference with central vision that may result from an anterior dialysis and the non-progressive nature of certain of these cases even though the occupation of the patient is strenuous. The patient was a boiler-maker.

Similar problems were raised by a patient reported by Haitz (1931). A one-eyed man, aged 49 years, developed a retinal detachment with anterior dialysis after a fall on his back. At the time he noticed a flash of light and two months later vision began to fail. During the following three years little change was noticed in the detachment and 5/36 vision was retained. No operation had been attempted.

Arruga wrote in 1929 regarding retinal dialyses, "lorsque elles sont trés grandes, elles sont impossible à guerir." Coppez (1931) also reports that large separations at the ora serrata are unfavourable for operation.

Schoenberg (1931) considers that "the presence of a very large tear, principally at the ora serrata (retinal dialysis) is a contra-indication to operation." This is probably a partial explanation of his statement that the number of inoperable cases of retinal detachment is large in proportion to the operable and the "doubtful" groups. The experience at Moorfields Hospital has been more satisfactory. Amongst 40 cases regarded as probable cures in Shapland's series 18 had an anterior dialysis (1931). It must be noted however that patients were considered to be cured if when they left hospital they had a full field and the retina re-attached. Of 15 cases operated on by Gonin four were reported as cures and three as partial cures with arrest of the detachment. Of seven cases under my care three are cured, one other appeared to re-attach but a vitreous haemorrhage occurred which is gradually being absorbed, one other is a probable cure though a small area of retina is not quite flat, and the remaining two appeared to be stationary and no operation was advised.

The dialyses in the successful cases had been present for at least one, three, six and twenty months respectively before re-attachment.

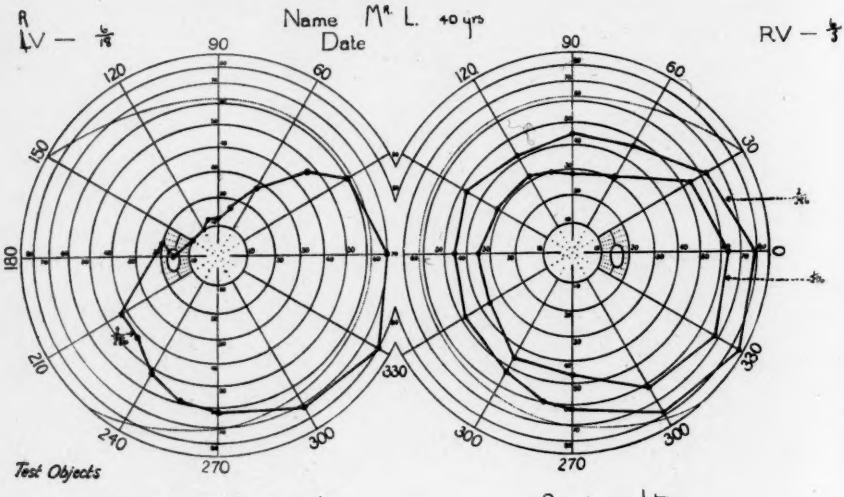
Axenfeld (1930) believed that if a detachment is limited to the periphery and signs of limitation such as marginal pigmentation and other changes are present, it is wisest not to operate. Amongst other patients he observed a doctor who practised for many years with bilateral peripheral retinal detachments. As a rule an

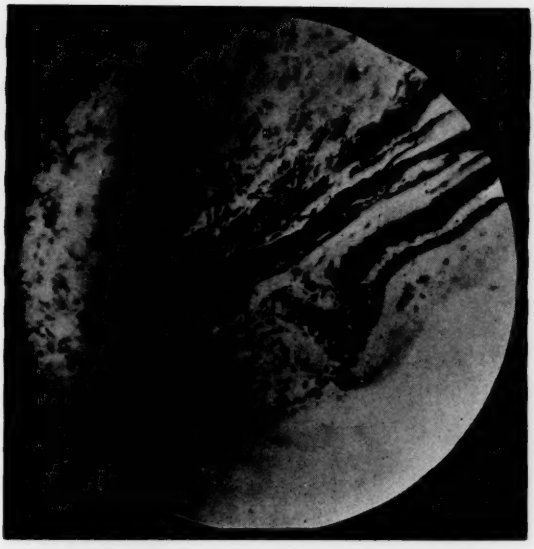
early operation is the only hope but one must not slavishly follow such a plan. Peculiar problems arise in each case and consideration of them must determine one's treatment.

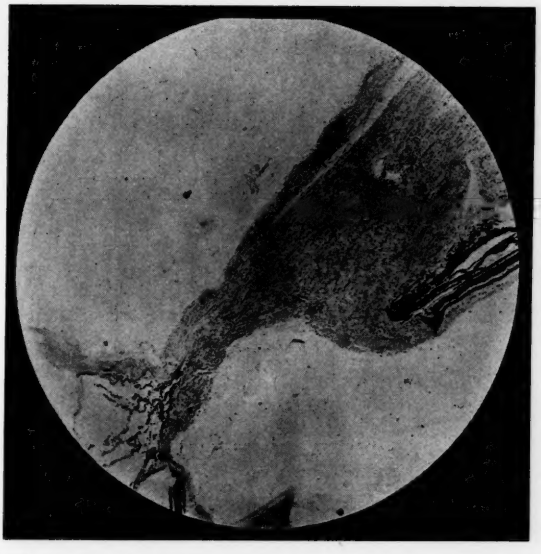
Though these opinions, expressed by the most experienced operators and even Gonin himself, do not justify optimism, yet the histories of the two following patients is sufficient to show that the previous hopeless outlook is now far removed.

Clinical Reports

1. K. L., aged 41 years, a clerk with slight hypermetropia. Health good except for constipation. Some carious teeth were removed. There was no history of injury. For 5 years he had observed spots floating before the right eye. Six months before he consulted me, he noticed a black line before this eye which would increase after heavy work. Two months later he observed a blur in the superior nasal portion of the right field. This field gradually contracted and eventually the whole field appeared blurry. An appearance like glowing embers appeared in the superior nasal quadrant of the right field. On examination the eye was quiet and of slightly reduced tension. The retina of the right eye was almost completely detached, though very slightly so centrally, and in the superior nasal quadrant. The vitreous







Microphotographs of scar from galvano-cautery puncture of rabbit's eye three months previously. Notice that area of retinal damage is greater than that of choroidal. High and low magnification.

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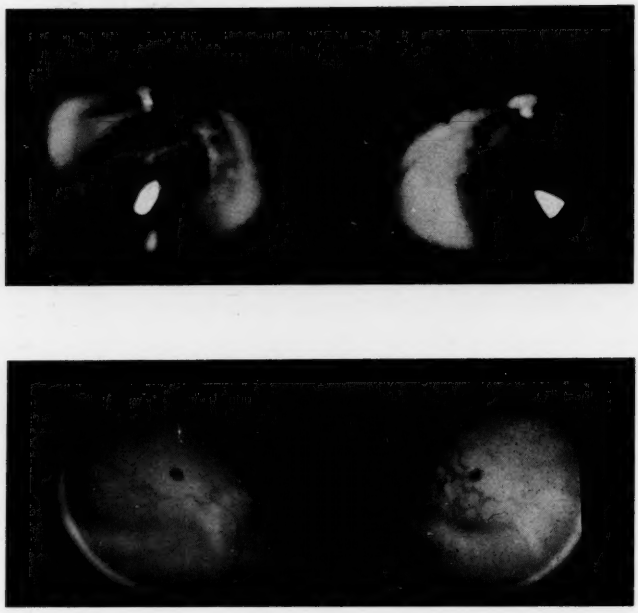
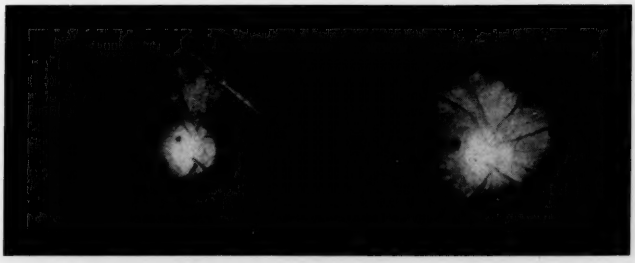
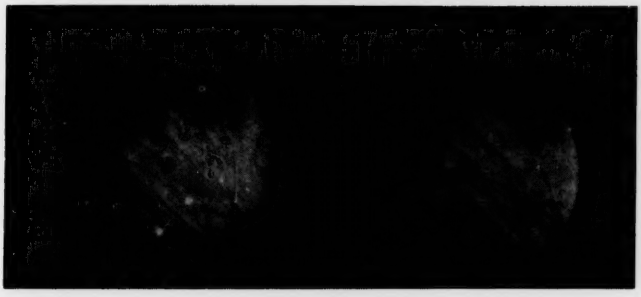
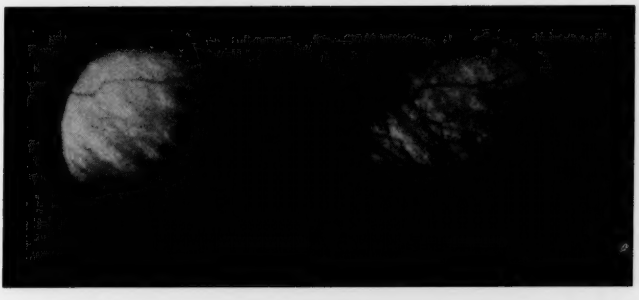
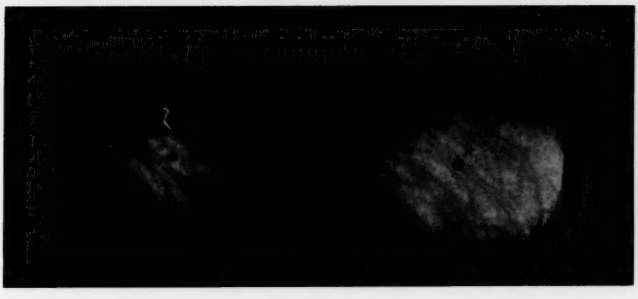


Mr. D. Stereophotographs showing (1) Retinal detachment as seen through pupil. Eye rotated slightly upwards. (2) Retinal detachment close to disc. Eye rotated slightly downwards.









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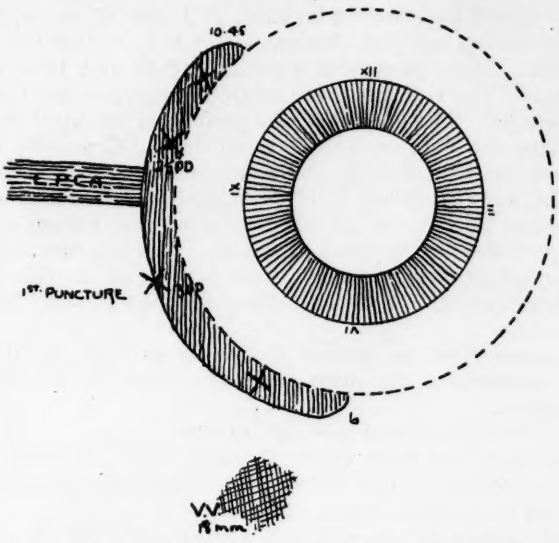
Mr. G. W. Stereophotographs of re-attached retina four months after ignipuncture of large anterior retinal dialysis.



Mr. L. Operation plan showing position of dialysis, long post. ciliary vessels, vena vorticosa and sites of four punctures.

showed fine opacities in the lower and temporal areas but considering the extensive detachment it was relatively clear. A dialysis extended from 6 o'clock to 11. The retinal edge was uneven, white and slightly rolled over. It separated the uniformly coloured choroid which could be clearly focused from the undulating retinal surface which was a paler red and gray. Neither in this patient nor in any that I have seen could the anterior margin of the dialysis be seen. Undue pressure on the sclera was considered unjustifiable as a means of revealing this edge. The vision was 6/18 partly and the field to a 2 mm. white object was as illustrated.

At the time the only operative experience known to the author was that of Rubbrecht who had found a dialysis after cauterising a small retinal aperture. It was decided to puncture the globe with a red-hot galvano-cautery loop at four separate sites. After the usual preparation and the hypodermic administration of omnopon (gr. 2/3) and scopolamine (gr. 1/150) and under cocaine and novocaine anaesthesia, the conjunctiva was turned back in two flaps which met over the external rectus tendon. The first puncture was made below the lower edge of the external rectus tendon and opposite the posterior retinal margin, that was 8 mm. + 4·5 mm. from the limbus. A considerable degree of semi-fluid vitreous escaped. The three other punctures were made immediately behind the ora serrata for it was considered that after the escape of fluid

the retina would have moved forwards and after all one's plan was to get the retinal margin adherent along the original line of the ora serrata. These punctures were at 7, 9.30 and 10.30 o'clock respectively. The two flaps were sutured in position and both eyes were bandaged. The operation was performed on April 22, 1931. The patient was kept in bed for three weeks. Gradually he was allowed to use his other eye. He was encouraged not to rotate quickly his eyes or his head. He was gradually raised in bed and then allowed up. As in all other cases he was nursed with the affected part of his eye towards his pillow. This is a most important point, though at times difficult, in the nursing of all patients with retinal detachment. A year later his vision was 6/5 and the fields of vision full.

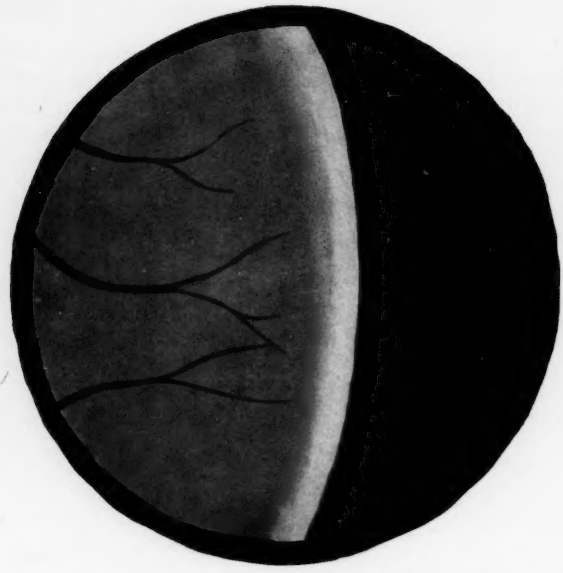
It is claimed that the special placing of the first and the more anterior situation of the three other punctures led to this satisfactory result.

Gonin (1930*c*) has found tears up to 18 mm. in length or diameter. This one must have been almost 20 mm. Verhoeff (1931) gives a preliminary report of a tear 15 mm. long which was still under treatment at the time of the report.

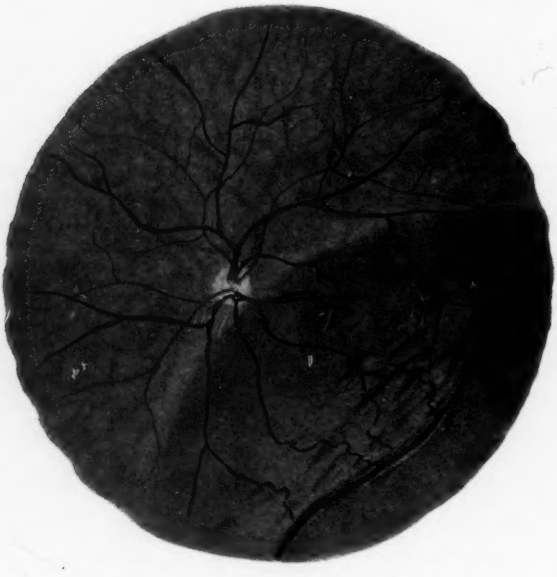
It is of interest to compare this history with that of a patient whom Gonin reported in September, 1931. He was a doctor, aged 25 years, who several years previously had apparently lost the sight of the left eye as the result of detachment. Progressive metamorphopsia appeared in the right eye, and vision in September, 1928, was 0·1. The whole of the temporal and inferior parts of the retina were detached and a series of folds stretched from periphery to macula; the latter was raised and oval. An anterior dialysis extended from 6.30 to 10.30 o'clock (*i.e.* 120°). The vitreous was cloudy, especially in the inferior region, and a large number of white pip-like bodies were present which were considered to be nodules of fibrin, probably due to a haemorrhage. It was considered impossible directly to close the aperture. A puncture was made as far back as possible at the level of the macula. The resulting scar produced several radiating folds, and vision improved to 0·2. Five other punctures were made. They were interrupted by acute glaucoma and an iridectomy of the other eye and acute otitis. Gradually the edges of the dialysis became fixed to the choroid. After three and a half months the vision was 0·6, and with the exception of a small zone in the inferior periphery the reapplication was complete. Six months later vision was 0·9 and the field was full. Two years later the condition was unchanged.

From my limited experience it appears wise to attempt to close the tear directly at one sitting, and not to puncture posteriorly and at several operations.

Another patient with an extensive anterior dialysis was G. W.,



Mr. G. W. Two cautery punctures opposite margin of anterior retinal dialysis at time of operation. The retina had not been touched by cautery.



Mr. G. W. Representation of retinal detachment and extensive anterior retinal dialysis. Fields of same (see p. 721). Stereophotographs of optic disc and periphery of retina after re-attachment (see Plate).

Coloured Drawings by Miss Margaret Fox, Melbourne.

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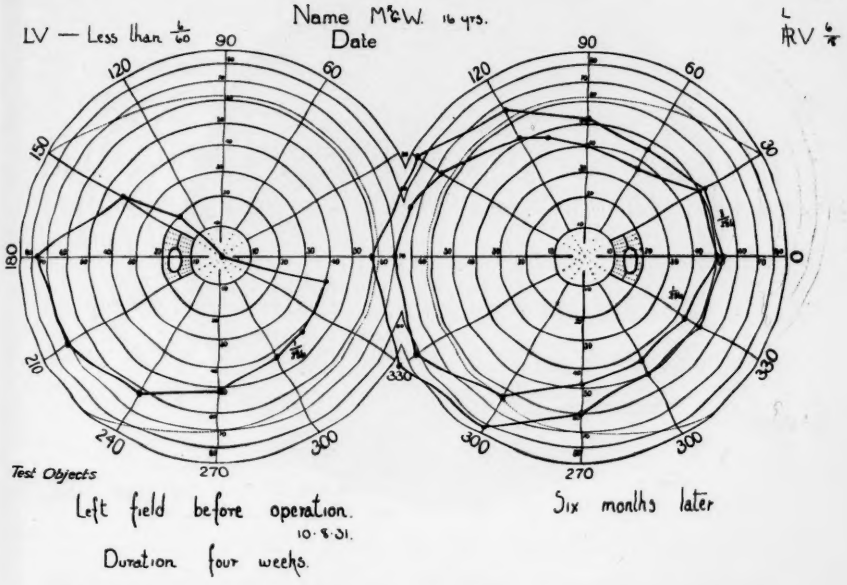
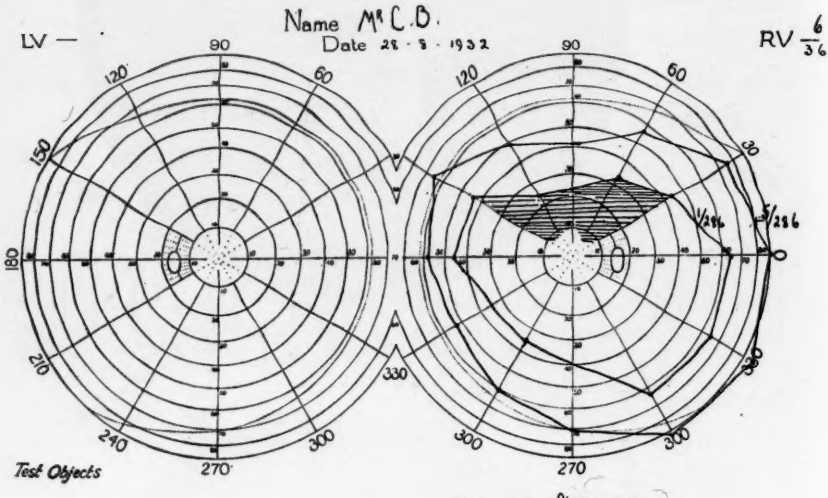
aged 16 years. Three weeks before his visit to me, he had noticed a blur in the superior nasal quadrant of the left eye. He had for some months observed numerous moving spots before this eye. Seven years earlier he had been knocked down and his head injured but no visual disturbances followed this. He had definite hyperpiesis. On examination an anterior dialysis was found which extended from 3 to 6 o'clock. There was normally a clearly defined choroidal pattern and the absence of this enabled one to recognise the limits of the detachment. Its limits otherwise would have been



difficult to find owing to the shallow nature of the detachment centrally. The two usual guides were absent *viz* a darkening of the colour of the blood vessels and a pallor of the retina where detached. Two cautery punctures were made at one operation. Ophthalmoscopy immediately after the operation showed that though the punctures were opposite the margin of the dialysis, the cautery had not actually touched the retina. This may explain the fact that the retina was not accurately re-applied centrally. Though the field of vision was practically full, central vision at first was only 6/36. Six months later the retina appeared to be in perfect position, and central vision was 6/18. During the interval the patient had a severe gastric disorder with frequent vomiting.

This and his return to swimming and diving have not affected his vision.

A third patient was Mr. C. B. who was kindly referred to me by Dr. William Box of Melbourne. Each eye was highly hypermetropic and astigmatic and apparently both were amblyopic, his vision being only 6/36. The right field had been defective for 1 year and 8 months. A retinal dialysis was found and an



extensive detachment. Above the dialysis a crescentic retinal fold was observed. Three cautery punctures were made at one sitting and two months later the retina appeared to be in position except for a small area near the nasal end of the dialysis. The fields are as shown.

It is interesting to recall Meller's advice against more than one puncture at a sitting. For, in my opinion, success in the preceding cases was partly due to multiple punctures at one sitting. Gonin states that the prognosis of anterior dialysis is made worse by the necessity for several operations. Arruga (1929) stated that cauterisation must not be made in the aperture itself, but on the retina which borders the dialysis. Gonin is inclined to puncture a little further back still because he has found the margin fragile. My

Fundus of Mr. C. B. showing anterior retinal dialysis and unusual crescentic retinal fold or prominence.

limited experience has produced the opinions that it is wise to make all the punctures at one operation and to make the first puncture opposite or a little posterior to the margin and subsequent punctures over the margin or a little in front of it according to the likelihood of the margin moving forwards. The possibility of the retina sliding forwards may be lessened by the presence of definite white retinal folds. Gonin usually punctures 12 or 13 mm. from the limbus. This is further back than appears necessary unless the margin of the retina appears very fragile. Juler punctured 9 mm. from the limbus in two cases with success.

Vogt (1932) reported an elderly male patient (– 1·0 D. S. myopia) whose right eye was struck by a pear falling from a tree. At first only conjunctival ecchymosis was observed but 10 months later a decrease of vision was noticed. On examination central vision was 5/6 and the field limited upwards. A dialysis was found from 5 to 9 o'clock in the right eye. Three months later the vision was only 0·1. Therefore three small ignipunctures with the small Sourdille needle were made over the free margin of the wound from 5 to 7o'clock. Four weeks later two punctures were made between 6 and 8 o'clock. Ten days later he found that vision was 1/6 and that the margin of the wound was adherent except between 7 and 9 o'clock. Two weeks later vision was 6/9, but after a few days a relapse occurred. Most of the re-attached area became detached and vision decreased to 0·1. A fresh series of punctures was made between 7 and 9 o'clock. Ten days later, for the first time the aperture appeared closed and the retina completely re-attached. Nine months later this state was unchanged and vision 0·7. This history is characteristic in that there was a considerable interval between injury and onset of visual loss, and that the initial loss was in the superior nasal quadrant.

The only occurrence of vitreous haemorrhage in my series of retinal detachments was in Richard K., aged 54 years. He was a sailor who had during a period of at least 2 months, detected a gradual failure of the left eye. The right eye could count fingers at two feet and had evidently been convergent since an injury received when very young. It appeared to be amblyopic. The left eye could just read 6/60. He had several very carious teeth and definite pyorrhoea. These conditions received the necessary treatment. His blood pressure after treatment was 112 diastolic and 170 systolic and there was marked thickening of his vessels. The superior nasal third of the left retina appeared to be in normal position. The remainder was detached. The separation was slight centrally and gradually became greater towards an extensive anterior dialysis, which extended from 3·15 to 7·15 o'clock. The white slightly rolled over edge of the retina was 2 D. D. from the ora serrata. The retinal vessels near the tear were extremely tortuous

and here and there dark masses of various sizes appeared on the retina close to the vessels. The vitreous was very degenerate, and scattered profusely through it were small dust-like opacities and a few coarse masses.

Two cautery punctures were made and at the early examinations the patient expressed satisfaction at the improvement of vision. Towards the end of the second week however, this improvement had gone and on ophthalmoscopy little red reflex was obtainable. Gradually the haemorrhage absorbed and was still improving 1 year 6 months later when the vision was 6/60.

Conclusions

1. Anterior dialysis is a special form of breach of retinal continuity. It probably occurs immediately behind the ora serrata. It produces retinal detachment, in the same manner as any other retinal aperture does, by the passage through it of fluid from the vitreous.

2. It occurs most frequently amongst relatively young patients, particularly males. The greater exposure to injury of these patients may partly explain this finding. The great majority of these patients are non-myopic. The preponderance may not be greater than that of non-myopic over myopic eyes. Other forms of retinal detachment are definitely associated with the degeneration of middle age and myopia, and appear regardless of sex.

3. The lower retinal area and particularly the inferior temporal quadrant appears to be predisposed to dialysis. This is in marked contrast with the form of retinal aperture due to degeneration which is most frequently found in the superior temporal quadrant. A retinal detachment in a non-myopic young man if non-traumatic is nearly always due to a dialysis and lies in the inferior temporal quadrant. A detachment of later life, particularly amongst myopes, appears first as a rule in the upper temporal, less frequently in the upper nasal, quadrant.

4. The actual cause of anterior dialysis, apart from obvious cyclitis and severe trauma, is obscure. Structural features, and particularly the attachment of the vitreous base and the "stretched" nature of the inferior temporal ciliary zone, appear to play a part in the mechanism that may produce dialysis. One has only to watch the development of a tear round a retino-vitreous adhesion or to see the alteration in shape and position of a hole in a posterior hyaloid membrane after cauterisation to realize the effect that vitreous traction may have on the retina. Such traction is particularly potent near the ora serrata owing to the firm attachment of the vitreous base. Once the pars ciliaris retinae and the ora serrata

are torn from the retina by the adherent base of the vitreous, the retina lies loosely, and almost un-attached, on the choroid until the collection of fluid beneath it causes its detachment. Such a separation may be aided by the presence of cystoid degeneration which appears most early in this apparently predisposed zone.

5. As a rule retinal dialyses tend to progress, particularly when situated temporally. However, retino-choroidal adhesions may form which may arrest the spread of the tear and its associated detachment. Inferior dialyses may be stationary for a long time.

6. The application of the principles of Gonin's treatment of the more common forms of detachment gives us a reasonable chance of cure. It may be found that, instead of making multiple punctures, a linear or wide surface cauterisation or application of endothermy, with an occasional puncture of the choroid by cautery or trephine will lead to the most satisfactory results. A modification of Guist's operation may prove of value. (Arruga 1932. Guist 1932. Safar 1932. Larsson 1932. Gonin 1932.)

7. Though the cases in this report are too few to justify decided opinions, yet, they show that strict adherence to Gonin's principles can produce operative cures.

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JOHN ZACHARIAH LAURENCE— A BELATED TRIBUTE

BY

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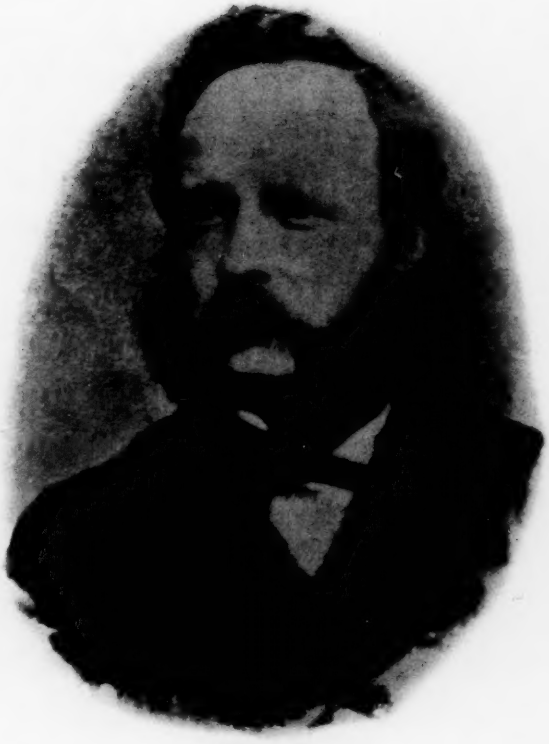
LONDON

THE passing of John Zachariah Laurence in his 42nd year in 1870, was barely noticed by his contemporaries. In the ophthalmic journals of that period there is no mention of his decease, and contemporary English medical periodicals, save for a short and rather patronising paragraph in the *Medical Times and Gazette*, are likewise silent. Nevertheless his memory has persisted. When Hirschberg came to deal with British Ophthalmology in the second half of the nineteenth century, he found Laurence a noteworthy figure, a learned and inventive man, and one who had aspired to great things; it was a matter for regret that nothing concerning his life was to be obtained from the usual sources of reference.

Laurence was well and truly interred by his contemporaries. They had come to bury Caesar not to praise him. Eleven years later the *Ophthalmic Review* appeared under the editorship of Karl Grossmann and Priestley Smith. So well buried was Laurence that the existence of an *Ophthalmic Review* that he had founded and edited for nearly four years (1864-7) but which had not survived longer than that, was not mentioned by the editors; presumably the first *Ophthalmic Review* had been forgotten. And whilst the South London Ophthalmic Hospital founded by Laurence in 1857 grew first into the Surrey Ophthalmic Hospital, then into the Ophthalmic Hospital, Southwark, and into the Royal South London Ophthalmic Hospital, and finally into the present Royal Eye Hospital, the memory of its founder grew ever more faint. His scientific works seemed to have been of ephemeral value—useful contributions to the problems of the day, and of interest only to the historian—when it was shown that the disease described by Bardet in 1920, and Biedl in 1922, and passing into the name of Bardet-Biedl was described in a masterly fashion by Laurence 55 years before in his own *Ophthalmic Review*.

Of Laurence's early life little is known. The records of University College, London, show that at the age of 19 years, he was entered a student in the Faculty of Arts in the session 1847-48. He takes Latin, Greek, English, Mathematics, Natural Philosophy, Botany and Drawing. Two years later he entered the Faculty of Medicine studying until 1854. Judging by the number of gold and silver medals and prizes he obtained, he appears to have been an exceptionally able student. He became M.R.C.S. in 1854, F.R.C.S. less than a year later, and M.B. London in 1857.

The early years of his career were devoted to general surgery. At least four minor contributions on Surgery appeared in the year of qualification in the *British Medical Journal* and the *Lancet*, and during the subsequent years he appears to have been an active member of the North London Medical Society and the Harveian Society, frequently exhibiting cases and specimens and taking part in the discussions. But his chief contribution in his early years was his book: "The Diagnosis of Surgical Cancer." This was the Liston Prize Essay for 1854, published in 1855. It was well received by the Press. *The Lancet* (1855, Vol. I, p. 265) praised it rather floridly "Mr. Laurence has got into the right path; many Goliaths no doubt are on the road, but we have great faith in one even young yet zealous for the downfall of of error and establishment of truth." Yet it is hardly more than a compilation such as was to be expected from a newly qualified man. It is a plea for the use of the microscope



JOHN ZACHARIAH LAURENCE

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in the diagnosis of malignant disease; in common with his contemporaries in England he attaches excessive importance to a specific cell "the cancer cell," though he admits that "the cancer cell" is not the *sine quâ non* character of cancer"—"the character of all the cells and of the field of view generally" have to be considered. Much the most significant thing about these unoriginal considerations is the fact that they led Laurence to intensive work on cancer. A series of articles published in 1856—"Illustrations of the Pathology of Cancer"—show the discerning and critical observer. He questions Rokitansky's classification of villous tumours of the bladder and rectum as cancers, pointing out that they do not give rise to secondary deposits, kill by hæmorrhage or intercurrent disease, and can be completely removed surgically. He also advances statistical evidence to disprove the contention that cancer is hereditary. These observations and others equally valuable were incorporated in the second edition of his "Diagnosis of Surgical Cancer" published in 1858. This is no longer the immature effort of an undergraduate, but is packed with careful observations. He reports fifteen cases of melanotic cancer to show the great frequency with which the liver becomes the seat of secondary deposits in this disease; "in only one single case did the liver escape contamination." Well worthy of notice is the chapter on Epithelioma. He holds that it is not a cancer, advancing clinical and pathological evidence for his views. One of the arguments used to show that epitheliomata are cancers was the fact that they recur after excision. Laurence disputes the validity of this argument, pointing out that, excisions performed are too limited to remove the infiltrated area; "indeed one . . . would feel more surprised if they did *not* return . . . when it is considered that in the case of the lips, a certain stereotyped operation, the V-shaped incision, is often so indiscriminately applied." It is only of recent years that this particular teaching has found acceptance. Modern surgical text-books still warn against V-shaped incisions.

One more surgical effort must be noted, a useful contribution to the literature. It was honoured by being read by Richard Quain before the Royal Medical and Chirurgical Society. "On Encephalocele: the history of a case with a tabular analysis of 75 cases" is a painstaking piece of work involving a search through the world literature of two centuries.

All this work together with many minor contributions was completed by 1858, in the four years following qualification. It fully bore out the opinion expressed in an early testimonial by Professor G. V. Ellis, of Ellis's Anatomy fame—"Besides the ability to acquire information, Mr. Laurence has also an aptitude for

conducting original investigations so that, if he employs his time diligently, he will be able to add something to our existing knowledge." However it was not as a general surgeon that he was to make his major contributions. What prompted him to abandon surgery in favour of ophthalmology cannot be said. But in 1857 he established the South London Ophthalmic Hospital with the help of Carsten Holthouse, Surgeon to the Westminster Hospital, and from 1860 onwards his attention was devoted exclusively to Ophthalmology.

The South London Ophthalmic Hospital—the present Royal Eye Hospital—started as a modest venture. It grew rapidly but never reached any significant dimension during the 13 years Laurence was destined to be associated with it. In the first six months 298 patients were seen and by the end of ten years 23,178. By 1870, the year of Laurence's death, the new cases for the year had grown to 3,514—about one-seventh of the present annual number. Laurence infused into the hospital his own enthusiasm for knowledge and research.

The fifties and sixties of the last century were stirring years; they brought out the greatness in great men. In the fifties Helmholtz and Graefe laid bare an unknown world by the ophthalmoscope, and in the sixties Donders laid the basis of the modern conception of refraction and accommodation. Laurence came to all this with all the freshness and vigour of youth. The ophthalmoscope was indeed firmly established in England in 1857 and Laurence could but add his quota of ophthalmoscopic observations. Particularly noteworthy is the account of a case of the condition now known as disciform degeneration of the macula; the condition is supposed to have been first noted by von Michel in 1877, but Laurence anticipated him by ten years (First *Ophthalmic Review*, Vol. III, p. 282).

There are also to his credit two forms of ophthalmoscope, one being a modification of Giraud-Teulon's binocular ophthalmoscope. But in routine work his most important contributions were on refraction and accommodation. When Donders's classic work appeared, Laurence went to Utrecht to study at the fountain head of this new knowledge. On his return he gave a course of lectures on the subject at the hospital, and these lectures apparently found a ready audience. They are mentioned in the annual report of the hospital for 1863; they appeared in the *Medical Times and Gazette* and were published in book form in 1865 (The Optical Defects of the Eye, London, 1865). They are a clear and concise exposition of Donders' teaching and the book found a German translation. The *British Medical Journal* (1865, Vol. I, p. 616) welcomed it

freely: "Mr. Laurence is well-known to have carefully studied the pathology of vision according to the light which most recent researches have thrown on it. He is, therefore, thoroughly qualified to give instruction to others and, moreover, shows in this book that he [can do so]."

Much of his work was of necessity of transient value. Instruments such as his cephalostat for controlling the head of the patient in intra-ocular operations must have been of value in the days before local anaesthesia. It finds a place in Brudenell Carter's "Practical Treatise" of 1875. His pupillometer is no worse than many other instruments of their kind. His groove-speculum is a forerunner of the modern Lang's speculum. The recognition of astigmatism and the use of cylindrical lenses were still in an early stage and Laurence's cell for determining the axis of cylinders was a useful appliance whilst his simple instrument for measuring squint is still in use as the linear strabismometer.

Of transient value too are most of his articles. "On the short-sight (?) of Squinters," an article published in 1861, in which he shows that in squinters there is a form of short sight which is corrected by convex lenses, and not by concave—this constituting a puzzling type of myopia—is of significance only in so far as it shows the great mercy that was Donders' work. But his practice was always up-to-date. This is evident from press communications and from his book written in collaboration with his house-surgeon, Robert C. Moon (A Handy-Book of Ophthalmic Surgery, London, 1866). He pleaded for iridectomy in glaucoma at a time when there was violent opposition to it; for Mooren's advocacy of preliminary iridectomy in diminishing the danger of cataract extraction and for Javal's stereoscopic exercises in the treatment of squint. He successfully tied the common carotid artery in a case of traumatic aneurysm of the orbit, an operation that was first done by Travers in 1804. Practically his last contribution to ophthalmology was the advocacy of rather bold surgery—excision of the lacrymal gland for epiphora, an advocacy supported by extensive work on the subject.

Laurence is generally credited with being the first to utilise the stereoscope in determining simulated blindness in one eye, though this is disputed, the credit being ascribed to Jabez Hogg (Norris and Oliver, System of Diseases of the Eye, p. 882, London and Philadelphia, 1900; see also *Amer. Encycl. of Ophthal.*, Vol. XI, p. 1181, Chicago, 1913).

There is no evidence that Laurence was concerned in this test, the error probably arising from the fact that the test is described in Laurence and Moon's Handy-Book of Ophthalmic Surgery. The original description comes from R. C. Moon (First *Ophthalmic Review*, Vol. II, p. 221). The dispute rests not between Laurence and Hogg but between Moon and Hogg. Laurence's interest in the

subject is confined to the publication of a short note on the prism test in malingering. (*Brit. Med. Jl.*, p. 965, 1860).

His range of interest was wide; for besides clinical observations he has to his credit studies in ocular physiology—on accommodation and colour vision and in ocular pathology. But it is not merely as a versatile and able ophthalmologist that he deserves to be remembered. No man sees his work completed, and the work that he started and did not see completed, is to-day a living force. He has become an integral part of modern ophthalmology, as founder of an important hospital, as a pioneer in ophthalmic journalism and as one of the forerunners of that growing school of thought which correlates ocular defect with bodily structure.

His activities as editor, and his description of the condition now known as Laurence-Biedl syndrome deserve fuller consideration.

It is not quite true to say that the *Ophthalmic Review* was the first English periodical devoted to the speciality. A tentative attempt in this direction was made as early as 1828 by John Richard Farre with the publication of a *Journal of Morbid Anatomy, Ophthalmic Medicine and Pharmacological Analysis, with Medico-Botanical Transactions communicated by the Medico-Botanical Society*. Only one number appeared, and, as Treacher Collins points out in his *History and Traditions of the Moorfields Eye Hospital*, the Journal may in a way be considered the precursor of the *Royal London Ophthalmic Hospital Reports*. It was, however, not till 1857 that these *Reports* began publication. It was originally intended that they should be published quarterly, and certain limitations on the matter to be published laid down. Laurence, and Thomas Windsor, of Manchester, who collaborated with him, considered there was need for a journal of wider scope. In their introduction to the first issue of the *Review* they state:—

> " . . . there is no English Journal which displays to the Surgeon a complete account of what is going on at home and abroad in this important branch of Surgery. The Royal London Ophthalmic Hospital Reports (which are no longer issued regularly but only from time to time), most valuable in themselves will on reference be found of a different scope from our Review which is quite as much intended for the profession at large as it is for Ophthalmic Surgeons, and which has taken for its model the well-known "Annales d'Oculistique" and the more recent " Monatsblätter " of Zehender.

The *Review* fully justified its promise. It was well edited and a valuable feature was the Retrospect of British and Foreign Medical Journals by Thomas Windsor in which contemporary literature was carefully reviewed. From its beginning the Journal showed a great

partiality for articles from Germany because it held that great advances were being made there. It can hardly be doubted that on the whole it succeeded very well in conveying the great ferment that was going on. But it had its defects; in its reviews of books a personal tone frequently crept in and furthermore, as Hirschberg points out, it counted without the overpowering influence of Moorfields *(Grossmacht von Moorfields)* and it was not British enough. It relied rather too much on foreign sources for its original contributions. This was an unfortunate combination of circumstances, for it led to an outcry and consequences which were neither dignified nor desirable. The *British Medical Journal* (Vol. I, p. 424, 1864), found the *Ophthalmic Review* a surprising production in which British work was being belittled. Jabez Hogg, who was unmercifully flayed in a review of a book of his, was led to the publication of a *Journal of British Ophthalmology* in which foreign work was discounted and in which abuse was heaped on Laurence and his collaborators. Yet the *Ophthalmic Review* went on, for the matter was good and the writing frequently little short of brilliant. The review of Hogg's book (Vol. I, pp. 96-109), is especially remarkable; as polemical writing it is superb. There is no indication as to who wrote it and it is possible that it was not Laurence but Brudenell Carter.

The outcry against the *Review* for not being sufficiently British was answered by Laurence in a dignified yet impassioned editorial in Vol. II. ("Ophthalmic Surgery at home and abroad.") He rebuts the charge that English work is being belittled. Reviewing the special circumstances present in different countries which make them best fitted for contributions in special directions he points out that England had not lagged behind, but like other countries is not self-sufficient. The lengthy conclusion of the article deserves full quotation:—

"And if it be asked how England had held her ground, and what, upon the whole, has been her place in this march of progress, the answer is easy and plain. She has done her own work and, in the branches in which she is most fitted to excel, she need acknowledge neither superior nor equal. Her rivalry with the Continent may be altogether friendly, untainted by one single feeling of jealousy or of shame. The names of her great men are household words throughout Europe. The continental journals transcribe, or only slightly condense, nearly everything that is published on ophthalmic matters by their English contemporaries. Her surgeons are eagerly and cordially welcomed at the great continental conferences; and the various improvements with which their names are associated are early tested in every continental hospital. The English surgeons go to the exchange of science to barter, not to borrow; and in such barter they do but recognise the fact that every country contributes

to the common weal most largely when its energies are mainly directed into the particular channel most favourable to their activity.

When all these things are considered, it is plainly the duty of those who conduct such a journal as this to ignore or forget all distinctions of nationality. The press of England, or Germany, or Holland, or France, or America, furnishes every quarter its store of novelties in facts or in opinions; and this store must be sifted and condensed without a single thought about the various localities that yield it. If the just claims of British surgeons are challenged, these pages will never be backward in advocating and maintaining them. Those who seek for more than this—who would give trivial matter from a countryman the preference over an important contribution from a foreigner, or who complain of the predominance of German material without being able to indicate that any fellow-countryman has been neglected—these seek more than it is possible to give. They may, perhaps, deceive themselves, and may fancy that they believe in their own grievance. In reality they cannot do so. They do but echo the angry and insensate cry—'Are not Abana and Pharpar, rivers of Damascus, better than all the waters of Israel.'

Not in such a spirit as this can the science of healing be rightly studied, or the art be rightly exercised. Nationality forms no barrier against disease, and race gives no exemption from the effects of medicine. There is one sense, at least, in which we are all inmates of the same hospital—all patients of the same Great Physician. It is our privilege to do good to all men, without reference to any of the distinctions that interfere, by reason of race, or language, or station, or religion, with the full display of so many of the other charities of life. In the exercise of this privilege our studies should surely be commensurate with our aims; and our faculties should be as ready to learn as our hands to help. The principle that should guide us was summed up by a great dramatist more than two thousand years ago, in one terse and telling sentence. Of that sentence this article has been but an expansion; and the sentence itself may serve both for a conclusion and a summary:—

'Homo sum; humani nihil a me alienum puto.'

The *Review* barely lasted four years; in all, twelve numbers appeared, but an index for the last four issues (Vol. III) was not published. Signs of impending collapse came early in the fourth year when Laurence announced in the eleventh number that Thomas Windsor had withdrawn from the joint Editorship "in consequence of circumstances which possess but a personal interest." Windsor was to continue to write the Retrospect, and these articles indeed appear as before in the last two issues.

Anyone who has turned over the pages of the *Review* must agree

with Hirschberg that it deserved a better fate. The first full-fledged British Ophthalmic Journal, with all its faults, was a worthy production.

What led to the collapse of the *Review* is difficult to say definitely. Feeble outside support and indifference may have killed it, but it is at least as likely that it ceased because the master-hand behind it was withering. It was at this time that Laurence's prolific activities came to a standstill. He was ill during the last two years of his life and probably for longer than that. The journal came to an end late in 1867; Laurence's activities during the following year were only fitful. The Minutes of the Royal Eye Hospital for 1869 speak of his illness and absence from the Hospital. If only for the sake of the journal one cannot but regret that this was so.

That chance which favours only those prepared for it, brought under Laurence's observation a small "fat, flat-framed, heavy looking child," who, "instead of looking straight at an object, always looked to one side of it, and on being told to place her hand on anything, she would be unable to direct it at once to the object, but felt about until she came in contact with it. She appeared to see worse as evening approached. In the daylight she was rather slow in her movements; but at night and by artificial light she walked with evident caution, always groping her way about with a degree of uncertainty. She also had a great objection to going out of doors at night, fearing that she would be 'run over'." Ophthalmoscopic examination revealed the appearance of retinitis pigmentosa. In her case there was no evidence of hereditary disposition, nor was she the offspring of a consanguineous marriage, as Liebreich had found to be the case in some of his patients. There was, however, a similar affection in three of her seven brothers, who in addition to the eye lesion, showed peculiar bodily defects; they were all stunted, possessed of a solid, heavy countenance, mentally dull, and in addition showed remarkable under-development of the external genitalia.

"The organs of generation are also strikingly implicated in the general want of development. The penis and scrotum of the eldest boy (Harry) are not larger than those of an infant of 12 months old. Only the left testicle—and that an exceedingly small one—can be felt in the scrotum. A few short brisly hairs are to be seen on the pubes. In the second (Frederick) the penis is somewhat larger, and two small testicles can be distinctly felt in the scrotum. There are a few scattered hairs on the pubes. In the third boy (Charles) no testicles at all can be discovered, his penis and scrotum being about the same size as those of his brother Harry."

The nature of the affection is discussed.

"In calling these cases by the name of 'Retinitis Pigmentosa,' we have been guided rather by usage than by the intimate nature of the cases. Had we taken the latter view, we should rather have entitled our paper 'Four Cases of Arrest of Development and Atrophy of the Eye'; or we might have gone even a step further in the generalization of our title as the arrest of development was by no means confined to the eye, but affected several other organs of the body. In this latter point of view, and more especially when we regard the general imperfection of the mental faculties, these patients may in a certain sense not be unaptly compared to cretins in a mild degree. In no member of the entire family, however, was there any bronchocele."

This clear picture of familial dystrophia adiposo-genitalis associated with retinitis pigmentosa was completely forgotten and overlooked until Bardet in 1920, and Biedl in 1922 re-described it, and it soon became known as Bardet-Biedl's Syndrome. We owe it to Solis-Cohen and Weiss (*Amer. Jl. of Med. Sciences*, Vol. CLXIX, p. 489, 1925) that Laurence's priority has been established, and in the growing literature on the subject the affection is now generally known as Laurence-Biedl's Syndrome, and sometimes also as the Syndrome of Laurence-Moon-Biedl, Robert Moon having collaborated with his chief in describing the condition. But little has been added to Laurence's description; polydactily has been recorded as an occasional part of the syndrome, and in the light of more extensive knowledge of metabolic disorders, it is now held that it is not the thyroid but the pituitary gland which is at fault in this condition.

If greatness is measured by a man's influence on his contemporaries, there was no greatness in Laurence, in spite of the crowded activity of his short life. But if greatness is measured by the quality of permanence in a man's work, Laurence has claims on more counts than one. Hirschberg considers that Laurence had aspired to do great things but failed to achieve them. With a fuller knowledge of the facts, Hirschberg's verdict would have been different.

Of Laurence's life little is known. From an entry in the Registers of University College he appears to have been born in London. No date could be ascertained. But in 1847 on entering University College he was aged 19 years, and at the time of his marriage in August 1854, he was 25. He must therefore have been born in 1828 or 1829, too early for his birth to be recorded at

Somerset House. The record of his marriage preserved at Somerset House, shows that he was married to Miriam Solomon, daughter of Nathaniel Solomon, at the West London Synagogue on August 9, 1854. His father's name is given as Samuel Lewis Laurence. The witnesses were Nathaniel Solomon and Isaac Lewis Lazarus. From his publications it appears that he was Surgeon at the Northern and Farringdon Dispensaries in 1855, and in 1858, Surgeon to the St. Marylebone General Dispensary. After 1858 he does not appear any more as a general surgeon, but as Surgeon to the South London Ophthalmic Hospital. In 1860 he also describes himself as Surgeon [? Ophthalmic Surgeon] to the Hospital for Paralysis, which appointment he does not seem to have held long. Towards the end of his career he was also Ophthalmic Surgeon to St. Bartholomew's Hospital, Rochester (1866-69).

Throughout his career he was intensely interested in the furtherance of Ophthalmology. His name appears among the 81 original members of the German Ophthalmological Society (Heidelberg) in 1864. He also kept in touch with French scientific work, being a member of the Society of Practical Medicine of Paris.

But apart from membership of these Societies and also of the Harveian and Pathological Societies and of the Society of German Naturalists and Physicians, to most of which he contributed papers, he also had wide non-medical interests. He was versatile to a fault; he found relaxation in singing, music, drawing and fishing, and was a fine linguist and a scholarly writer.

He died on July 18th, 1870, after a protracted illness, his active life having come to an end before the beginning of 1869. His wife predeceased him on March 26th, 1863, at the age of 33. One son and three daughters were left, for whom provision was carefully made as revealed in the will dated June 16th, 1868, and preserved at Somerset House (entered September 10th, 1870). One daughter and her children, as also the children of a sister, continue the family at the present time.

Laurence was buried at the side of his wife in the Balls Pond Road Cemetery (Kingsbury Road, N.1), of the West London Synagogue. The inscription on the tombstone speaks of his paternal devotion and his zealous support of medical charities.

It is a pleasant duty to acknowledge the help received in the work entailed in this paper. I am particularly indebted to Miss Millicent M. Oldham, the Alumnus Secretary of University College, London; to Sir George Lewis, Bt., the grandson of the late Sir George Henry Lewis, one of the executors of Laurence's will, and to his cousin Mr. Harry R. Lewis, through whose efforts contact

with Laurence's descendants was established; to the Secretary of the West London Synagogue, and to the Secretary of the Royal Eye Hospital, Mr. F. E. D'Alton and his staff. I am also obliged to Mr. R. R. James for suggestions and for his sympathetic interest.

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IRIDENCLEISIS AND TRAP-DOOR IRIDECTOMY IN THE TREATMENT OF GLAUCOMA*

BY

T. HARRISON BUTLER

BIRMINGHAM

AT the first meeting of the Society that was held in Coventry, in June, 1926, I read a paper on Iridencleisis and showed some cases upon whom the operation had been performed. At that time I had performed 15 operations only, and the paper was of a preliminary character. It was published in the *Trans. Ophthal. Soc. U.K.*, Vol. XLVI, page 353, 1926. When the paper came to me for proof correction I added a footnote stating that I had given up the operation as *ineffective*. I returned to trephining for a time, but one or two rather tragic results made me feel that I must give iridencleisis another trial. My determination was strengthened by a conversation with Dr. Harald G. A. Gjessing, of Drammen, Norway. He pointed out that I had been too precipitate in relinquishing the operation because some of the eyes did not at once or within a limited time show the desired fall in tension, and that probably most of the cases that I had trephined after iridencleisis would have been ultimately successful without further operation. His experience was that occasionally the full effect was shown only after a month or more, and that during this period of convalescence it was necessary to employ pilocarpine, and daily massage of the globe. Subsequent experience has shown that this is true. One case strikingly exhibited the delay. Mrs. H., a private patient with a rapidly contracting field and excavation of the disc had a tension of 30 Schiötz. After iridencleisis the field showed a most unusual and rapid recovery, but the tension was still 30. The eye was massaged for a month and pilocarpine used, and under this treatment the tension gradually fell to 20, and to-day, 18 months later, it is still 20, and the field is much larger than it was before the operation.

There is nothing new or experimental in the operation. It has been advocated and practised in many forms by Colonel Herbert, by Holth, Borthe, Wilmer and Gjessing, to name but a few. Wilmer (*Trans. Ophthal. Soc. U.K.*, Vol. XLVII, p. 231) gives the statistics of 517 operations, with 87.4 per cent. of successes, and only 0.38 per cent. of late infection. Gjessing in the *Arch. of Ophthal.*, Vol. VI, p. 489, 1931, gives a careful analysis of the follow-up examination of 122 operations with 83.5 per cent. of

* A Paper read to the Midland Ophthalmological Society on June 7, 1932, at a meeting held at the Coventry and Warwickshire Hospital, with an exhibition of cases of the operations.

success and no late infection. In three cases only was a direct detrimental effect noted from the operation.

Before discussing the actual operation, its technique, and its results I will postulate what we desire from an operation for the relief of chronic glaucoma. It has been definitely proved that it is necessary to obtain a permeable cicatrix. The filtration should not be concentrated upon one small area, but should be diffused over a wide surface. It must be permanent, and not excessive. We desire to reduce the tension to normal, not to obtain hypotony. The procedure should not be one that causes an excessive amount of trauma, and should not in general be followed by any iritis or even ciliary injection. The cicatrix although permeable must be well covered by an adequate layer of conjunctiva so that the risk of infection of the eye is minimal. The cosmetic effect should be good, unsightly lumps and bulges must be avoided. An operation that yields a high percentage of success should be chosen only when the element of tragedy does not too frequently harrow both surgeon and patient. We are unable to cure all cases of glaucoma, but we ought to reduce the operative loss of vision and perhaps of the eye itself to very low figures.

I have been able to collect the notes of 60 iridencleisis operations. I think that I have performed about 70 in all, but owing to changes in hospital appointments, I have not been able to complete the list.

The statistics have been made in the following way: I have asked my ward sister to give me the names and numbers of the operations taken from the operation book. I then obtained the case sheets, and analysed them in the same way that I treated my trephine cases in a previous investigation. I noted the tension before operation, and that mentioned in the last note made. If the tension was normalised and the vision not made worse, the case was classed as a success. The vision was treated in the same way, acuity before operation, and final acuity recorded in the notes. The changes in the fields were noted in many cases, and the duration of the case recorded. It is obvious that these statistics are incomplete. I have not had the time or the power to re-examine all the cases: some have a short, others a long duration. But the same objection can be made to my trephine statistics which were made in exactly the same manner. The statistics favour iridencleisis, in that I have been performing this operation for a much shorter time, six years, whereas the trephine records were taken from 1920 to 1930, and I have many cases who were operated upon 15 and more years ago, and are still holding their own.

During the first three years that I performed iridencleisis I to some extent selected my cases, reserving the worst examples for the trephine because I had the idea that the iridencleisis was not so efficient in reducing tension as trephining, but during the past two

years I have found that it is perfectly effective, and have practically given up trephining.

It may seem to be unfair to criticise one operation and uphold another. I wish to avoid any undue enthusiasm, and to be perfectly fair and unbiassed. Early in my operative career I was unfortunate in having an undue number of late infections, mainly after Holth's punch operation. I returned to iridectomy for chronic glaucoma. I then took up trephining and continued for several years. My experience taught me that something less dangerous was necessary, and I feel that I have found it in iridencleisis.

It seems necessary to state my views upon the advantages and dangers of trephining. These have been gained from my own operations and from conversations with colleagues, many of whom have had the same troubles as myself.

There is no doubt that trephining cures chronic glaucoma in a large number of cases if performed early enough. Wilmer (*Trans. Ophthal. Soc. U.K.*, Vol. XLVII, p. 230) gives statistics of trephining. One surgeon with 179 operations had 72 per cent. of success. Another with 140, 92.8 per cent., and another with 3,381 had 77.6 per cent.

Wilmer himself records 88 per cent. of personal success.

In 1914 Mr. Jameson Evans and myself read a Paper to the Oxford Congress on the "Results of Modern Operations for Glaucoma" (The *Ophthalmoscope*, Vol. XII, p. 468). We had notes of 23 cases of trephining for chronic glaucoma and they were successful in 87 per cent. In my Middlemore Lecture for 1930 on "The Results of Ophthalmic Operations" (*Brit. Jl. of Ophthal.*, Sept., 1931), I gathered the statistics of operations performed between 1920 and 1930. There were fifty trephinings for chronic glaucoma, and the percentage of success was 70 per cent. It is reasonably accurate to conclude that about 75 per cent. of all trephinings for chronic glaucoma are successful.

On the other hand it is necessary carefully to examine the cases classed as unsuccessful, and to note the number that have been definitely injured by the operation, even to the loss of the eye. We must also study the successful cases and the nature of the convalescence.

The disadvantages of the trephine operation that have led me to feel that a better operation must be sought are the following:—

(1) The operation is a serious insult to the eye. It is practically always followed by considerable injection, and very frequently by frank iritis. For this reason it is the practice always to instil atropine after the operation. The patient will be an in-patient for from ten days to a fortnight.

(2) In a large proportion of the cases an ectatic bleb will form over the site of the operation, which may bulge the eyelid, and

become a deformity. So often is this the case that one well-known ophthalmic surgeon told me that it was to him a deciding factor in rejecting the operation. Not only is this bleb unsightly, but it is a constant menace to the integrity of the eye. I have seen these ectatic scars not only in my own practice but in cases operated upon by many other surgeons.

(3) A development of myopia after the operation is common, because of the forward movement of the lens. This gradually disappears, but some of it may remain.

(4) Late formation of the anterior chamber is not rare. It is always an anxiety and may be a danger in that it leads to the development of nuclear cataract. In one case, a private patient, the anterior chamber did not reform, and a complete nuclear cataract formed. This happened in both eyes which were not operated upon at one time. The patient entered the hospital with 6/6 in each eye and left blind. I was not able to extract the lens which seemed to have a consistence like glue. I have seen another case which is figured in my *Guide to the Slit Lamp*, p. 43. The eye had been operated upon by a colleague, and the scar was ideal. The anterior chamber remained absent for a year, and then nuclear cataract developed. Similar things have happened to others who for this reason are giving up the trephine.

(5) Post-operative cataract, developing rapidly or later on, is common. My statistics give 10 per cent., and this figure agrees with that given by other operators.

(6) Late infection resulting in the total loss of the eye has occurred in 1 per cent. of my cases. Wilmer gives the percentage as 1·2. In addition to these serious cases there are others which are not so serious and yield to atropine and other treatment. I have two cases in mind of this kind. One private patient had several attacks, and eventually, six years after the operation, the eye was lost. She had, however, had six years of useful vision in the eye. The other was blind from glaucoma when I first saw her. In another case one attack of late infection succeeded another till I cut them short by cauterising the scar and covering it with a conjunctival flap. This operation was done with Holth's punch in 1914. She maintained useful vision till this year. Her tension is still normal, but her disc is now deeply cupped and atrophic.

(7) Occasionally a trephined eye becomes hypotonic: the evils of this condition have been pointed out by Treacher Collins (*Trans. Ophthal. Soc. U.K.*, Vol. XXXVII, p. 281).

We may sum up by saying that trephining in chronic glaucoma gives an excellent percentage of good results, but that some of the failures are so disastrous that the operation should be given up if a

better can be found. In my series from 1920 to 1930 4 per cent. were enucleated for one reason or another.

In acute glaucoma the statistics for the trephine are very bad. There are some cases in which the iridectomy has failed to achieve the desired reduction of tension and something more must be done or the surgeon decides at once that iridectomy will not suffice. In my series I had 24 such, 54 per cent. were successful, and 24 per cent. were excised. It is true that many of these were severe, neglected and complicated cases.

(8) What are the objections to iridencleisis? These are in the main purely theoretical: I have been told that in performing iridencleisis "I am deliberately doing what generations of ophthalmic surgeons have studiously tried to avoid, the inclusion of iris in a scar." "The operation is a violation of the first principles of the surgery of the eye." "Iris inclusion must lead to an irritable eye and eventually to sympathetic ophthalmitis." It is of course true that the small prolapses that occasionally follow extraction are a constant menace to the eye. Many years ago one of my patients lost her eye from this cause six years after the operation, and I know of another similar catastrophe. But the conditions after such an accidental prolapse and iridencleisis are totally different. The iris inclusion is well covered not only by conjunctiva but by Tenon's capsule. As a matter of fact these objections are proved by practice to be invalid. In none of my 70 operations has there been any suggestion of irritation from the included iris. I have had no sympathetic ophthalmitis, and as far as I am aware no case has been recorded in the literature. I do know of one case of sympathetic ophthalmitis after trephining. It was mentioned some years ago at the Oxford Congress by an American surgeon.

The only real objection to iridencleisis is that its effect is apt to be slow, and that if the after-care is not carried out conscientiously the filtration may become ineffective. In one series of trephine operations I found that 20 per cent. of the failures were due to firm healing of the hole. I cured this by using a 2 mm. trephine instead of a 1·5 mm., but the larger instrument introduced other complications, late formation of the anterior chamber, a larger proportion of ectatic scars, and hypotony. In any case a certain number of trephine operations fail because they are too good, the cicatrix heals normally and ceases to filter. The same is true of iridencleisis and probably of all attempts to form a permeable scar.

The advantages of iridencleisis are many:—

(1) The operation is one that does not disturb the eye. It is hardly ever followed by iritis, and rarely by any marked injection. The condition of the eye after operation is the same as after a preliminary iridectomy. It is never necessary or advisable to use

atropine, and the patient can leave the hospital and return to work within a week.

(2) The ectatic scar is very rarely seen. In general there is a soft pad of general oedema round a dark discolouration under the conjunctiva representing the prolapsed iris. The pupil, contrary to what one might imagine, is never drawn up. In a word, the operation provides the ideal filtering scar.

(3) It is uncommon to find any change of refraction after iridencleisis, and any slight myopia is transitory.

(4) Late formation of the anterior chamber is not seen. The condition is exactly that present after an ordinary iridectomy.

(5) Post-operative cataract has not occurred in any of my cases, and it is not reported in the literature concerning the operation that I have read.

(6) I have not had a single example of even mild late infection. Wilmer (*Loc. cit.*) gives the percentage as 0·38 per cent.

(7) I have never seen hypotony after the operation, in fact the tendency is rather in the other direction, and, as has already been stated, massage is necessary in some cases before the tension is normalised.

(8) Quite a large number of the cases have shown an enlargement of the field of vision after iridencleisis. I have not noticed this to anything like the same extent after trephining.

Iridencleisis is as successful in acute glaucoma as in the chronic variety. It is my practice never to operate upon a congestive case till conservative measures have failed, or have been only partially successful. I have formed the impression that a case of acute glaucoma which does not yield to eserine is not generally cured by simple iridectomy. In other cases, as for example long-standing high tension, and eyes that have been treated with atropine, it is obvious from the first that something more will be necessary. For this reason, if the anterior chamber is not too shallow, I now perform iridencleisis as the operation of choice in congestive glaucoma. This operation is not more formidable than simple iridectomy and is far more effective. If the anterior chamber is very shallow I employ my method of trap-door iridectomy which I shall describe later in this paper.

I am somewhat diffident in giving my statistics of iridencleisis, for they seem too good to be true. I can only imagine that I have been very fortunate. Perhaps a real follow-up investigation would make them less flattering.

ACUTE GLAUCOMA

Number of operations ...	12
Successful	83·3 per cent.
Cataract	0·0 per cent.
Total loss	0·0 per cent.

One case developed double iritis six months later which was cured in the usual way with atropine.

CHRONIC GLAUCOMA

Number of operations ...	44
Successful	93·2 per cent.
Cataract	0·0 per cent.
Total loss	0·0 per cent.

In two cases the final result was unknown. Judging by the condition recorded when the patient left the hospital both would be successful, but to be perfectly fair I have counted one as a success, the other as a failure.

COMPLICATED GLAUCOMA

(Haemorrhagic and secondary)

Number of operations ...	4
Successful	50 per cent.
Cataract	0·0 per cent.
Total loss	0·0 per cent.

In one case an old interstitial keratitis recurred, but a good result was obtained after a course of N.A.B.

TOTAL STATISTICS

Number of cases	60
Successful	90 per cent.

No cataract formation, and no late infections.

If these statistics be compared with those obtained in exactly the same way for trephining, the superiority of iridencleisis will be obvious. They are taken from my Middlemore Lecture *(Loc. cit.)*

ACUTE GLAUCOMA (1920-1930)

Number of operations	26
Successful	54 per cent.
Cataract	0·0 per cent.
Total loss, excision	24 per cent.

CHRONIC GLAUCOMA

Number of operations	50
Successful	70 per cent.
Cataract	10 per cent.
Total loss, excision	4 per cent.

Description of the Operation

The eye is not treated with any antiseptic previous to the operation. Reliance is placed on the natural lysozyme present in the normal tears. A drop of eserine is instilled with the first application of cocaine. This is to prevent dilatation of the pupil which would make the operation difficult.

An incision is made with squint scissors horizontally about 10 mm. above the limbus. Tenon's capsule is picked up with the forceps and the incision carried down to the sclera with a few snips of the scissors and a small pouch made.

The assistant now picks up the point of the flap, and a narrow keratome (I use my own model) is placed upon the sclera at a point about 3 mm. from the limbus. The assistant now drops the flap over the blade of the knife which is slowly pushed into the anterior chamber till its point is seen. This is a delicate process because it is blind till the instrument appears. The keratome is now pushed in till its point is level with the centre of the cornea. It is withdrawn with a sideways movement to make the opening a rectangular rather than a triangular one. The assistant again lifts the flap and Matthieu's iris forceps is introduced to grasp the iris near the sphincter. The iris is withdrawn, and is half incised with de Wecker's scissors held backwards. This divides the sphincter. If the iris is merely withdrawn and not incised it will return into the anterior chamber. The flap is now smoothed into place and the operation is complete. No after-treatment is called for.

Trap-door Iridectomy

Ordinary iridectomy in a case of acute glaucoma is a difficult and often dangerous operation, and if performed in the classical manner, removing a large sector of the iris, it can be regarded only as a horrible mutilation. If the anterior chamber is very shallow, a not uncommon condition in congestive glaucoma, there is grave danger of wounding either the lens capsule or the back of the cornea. The first accident causes cataract, the second a permanent opacity of the cornea. It by no means follows that when a localised cataract forms after operation it is due to any lack of skill on the part of the operator. I have one case which I have followed up for several

years. A trap-door iridectomy was performed. After the operation a localised cataract was discovered. Under the slit-lamp a wound was seen in the anterior capsule, having two horizontal lips, exactly as though a keratome had been pushed well home into the lens. I have seen this appearance twice. There is no doubt that in a case of congestive glaucoma the lens becomes turgid. When the support of the iris is removed from the capsule it may burst and produce a localised cataract. Fortunately these cataracts do not spread and are not in the line of vision. Not only is classical iridectomy dangerous, but it is apt to be followed by considerable astigmatism, and small prolapses of a dangerous type are not uncommon. I have seen them not only after my own operations, but in those operated upon by others. In the nature of things it is not always possible to avoid them. Trap-door iridectomy short-circuits all these difficulties. The operation is performed exactly as though a trephining operation was to be done with the single exception that the disc, which should always be cut with a hinge, is not removed. The trephine is inclined well forward towards the end of its work, and the disc hinges at its upper edge. The iris practically always prolapses, it is snipped off and the disc replaced like the door of the trap-door spider's lair. The surface of the sclera is smoothed down through the conjunctiva, and the flap sutured in place.

The operation has the following advantages:—

(1) There is no possibility of wounding the lens or the cornea.

(2) The iris is detached from its peripheral attachments, in such wise that the iridic angle is thoroughly freed from the root of the iris.

(3) There is no post-operative astigmatism.

(4) If there is any prolapse it is well covered by the conjunctiva and Tenon's capsule.

(5) The majority of the cases get a little permanent filtration, but an ectatic bleb is very rare.

As far as I can see there are no disadvantages. For some years I have used this operation and have given up ordinary iridectomy.

STATISTICS

I have gathered the notes of 18 operations: successful, 83·3 per cent.

At the Meeting a series of cases was shown both of iridencleisis and of trap-door iridectomy.

A HAND CAMPIMETER FOR THE CONFRONTATION TEST

BY

GEORGE MACKAY, M.D., F.R.C.S.E.

EDINBURGH

THIS campimeter has been designed to provide a simple method of measuring the approximate extent of the field of vision as now required by the standard of visual deficiency set up by the Department of Health in Scotland (and recommended for adoption in England) in connection with the administration of the Blind Persons' Act (1920).*

It affords a means of estimating the field for hand movements with more precision than is possible by a mere guess on the part of the examiner when moving his hand through uncharted air. If a finer test object than a hand be employed, the measurement can, of course, be made more accurate. But for the visually defective who are applying for blind persons' benefits, refined tests are rarely necessary, or if required—for instance, for scotomata—can be made with an ordinary screen campimeter or perimeter.

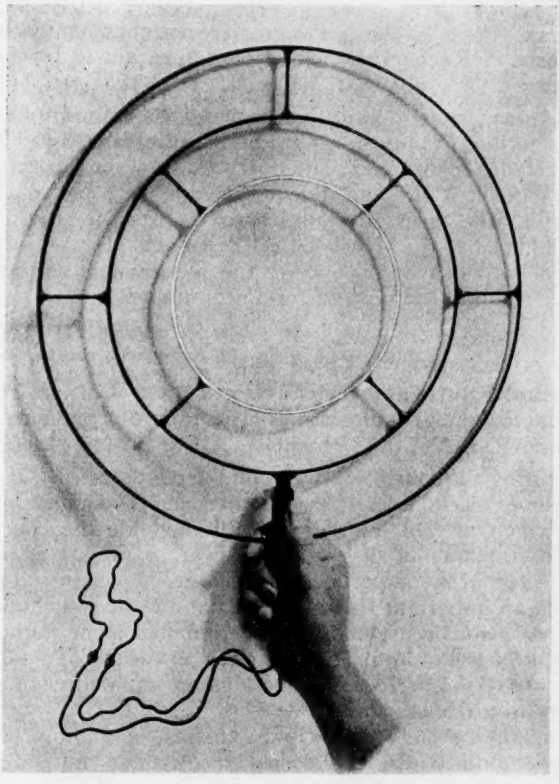
The apparatus consists of three concentric circular rings of wire. The innermost when held in a vertical plane at a distance of approximately twenty inches from the patient's face delimits a field of 10°. The outermost ring corresponds to a field of 20°. The intermediate circle indicates a field extending to 15° in all directions from the line of fixation. The radiating wires not only act as bracing staves but indicate the vertical and horizontal division of the field into half fields, quadrants and octants. The innermost ring is painted white to facilitate its recognition by a partially blind person. The other two rings are painted black and connected by a wooden handle which supports the whole frame.

A single cord twenty inches (half a metre) long attached to the handle and held fully extended by the patient with the free end resting on his cheek may be used to give the correct distance which should be maintained between the plane of his face and that of the frame throughout the test. But if the cord be suitably lengthened and made into a loop it can be passed behind the patient's neck and the proper distance is secured by the examiner drawing the frame towards himself sufficiently to keep the doubled cord taut while the patient remains impassive. A bead on each limb of the loop indicates the twenty inch measure and when the cord is in

*See Appendix I of the Joint Memorandum issued by the Department of Health for Scotland and the Scottish Education Department on October 22, 1931, published by H.M. Stationery Office, price 2d.

position the beads should be approximately in the same vertical plane as the patient's eyes.

Each eye can be tested separately, if desired, in the ordinary way employed in the confrontation test, one eye being covered, and the patient's right eye fixing the examiner's left eye or the patient's



left eye fixing the examiner's right eye. But the actual requirement for the certification of blindness is the ascertainment of the total field with both eyes open. For that purpose the patient is requested to look through the centre of the white ring to the root of the examiner's nose, with both eyes open, if both are present.

This campimeter was exhibited at the Edinburgh meeting of the *Ophthal. Soc. U.K.* in May, 1932. It can be supplied by Theodore Hamblin, Ltd., 15, Wigmore Street, Cavendish Square, London, W.1.

ABSTRACTS

I.—TRACHOMA

(1) **Morax (Paris).—Bacteriological researches on trachoma in Algeria. (Récherches bactériologiques sur le trachome en Algérie).** *Rev. Internat. du Trach.*, July, 1931.

(1) **Morax** made himself familiar with the cultural phenomena of the bacterium granulosis by studying cultures sent to him from the Rockefeller Institute. He then went to several towns in Algeria where trachoma is rife and inoculated with the products obtained by scraping the diseased conjunctiva the special culture media recommended by the Rockefeller Institute. His results were entirely negative as far as concerns the development on the culture media of bacilli of the type bacterium granulosis.

A. F. MACCALLAN.

(2) **Olitsky, Knutti and Tyler (New York).—Corneal reactions to bacterium granulosis and other micro-organisms.** *Jl. of Exper. Med.*, Vol. LV, pp. 803-813, No. 5, May 1st, 1932.

(2) During the course of studies on the relationship of bacterium granulosis to trachoma, **Olitsky, Knutti** and **Tyler** have produced lesions which in their opinion closely resemble the conjunctival lesions of the human disease. However, pannus has not been demonstrated in the experimental disease. Since corneal changes play such an important rôle in trachoma, and inasmuch as similar lesions have not been produced experimentally, the authors have studied the effects of injury to the cornea by various agents. In this way they have sought to determine the type and degree of stimulus necessary to produce pannus.

The action of various micro-organisms, including bacterium granulosis, and of the tissue suspensions was studied both in rabbits and monkeys after intra-corneal injection. In rabbits the bacterium granulosis only induced early uncomplicated and enduring keratitic lesions. The results of experiments with monkeys indicate that while pannus is not a sequel of experimental trachomatous conjunctivitis, a lesion resembling it follows intra-corneal inoculation of bacterium granulosis.

The items of the bibliography attached to this article do not include Herbert's original and important paper in the Transactions of the Ophthalmological Society of the United Kingdom, Vol. XXIV, pp. 67-77, 1904, entitled "Trachomatous Pannus and

Associated Corneal Changes," a study of which should precede all experimental and clinical work on trachoma.

A. F. MACCALLAN.

(3) **Talbot (Tunis).—Trachoma in the military territories of Southern Tunisia. (Trachome dans les territoires militaires du sud Tunisien).** *Rev. Internat. du Trach.*, January, 1932.

A year of prophylactic trachoma training in Southern Tunisia. (Une année de prophylaxie scolaire du trachome dans le sud Tunisien). *Rev. Internat. du Trach.*, January, 1932.

(3) **Talbot** is pursuing his important and self-denying work on the epidemiology of trachoma in Tunisia. He considers that contagion is acquired almost invariably in the home by direct and digital inoculation. The better classes who live under better hygienic conditions have a much lower trachoma index than the poorer classes. He adopts the classification of trachoma which is carried out in Egypt, as well as the treatment. But he has to adopt modifications in cases of distant towns and schools where the constant presence of an ophthalmologist is impossible for financial reasons. Full recognition of his labours are due to Talbot both by trachomatologists and by the Colonial Administration of France.

A. F. MACCALLAN.

(4) **Redslob (Strasbourg).—Trachoma in Alsatian soldiers transported to the Russian front. (Le trachome des soldats alsaciens transportés au front russe).** *Rev. Internat. du Trach.*, January, 1932.

(4) **Redslob** calculates that about 300,000 Alsatians were conscripted into the German armies during the War. Of these at least two thirds were sent to the Eastern front for political reasons, where they were billeted among Polish, Lettish, Lithuanian and Ukrainian families. As is well known their hosts are very heavily trachomatised. In spite of this Redslob, who is an ophthalmologist of long experience, and carefully examined the medical reports of all Alsatian soldiers who returned and claimed a pension on account of wound or sickness, has been able to find only three who contracted trachoma while sojourning intimately among a heavily infected and rather dirty population.

This is an interesting and remarkable observation. To Redslob it appears to suggest that Alsatians have some degree of immunity to trachoma. To the reviewer it simply suggests that the Alsatians are men of extremely cleanly habits, who avoided contagion by their good hygienic condition.

A. F. MACCALLAN.

(5) **Motais (Cochin-China).—Concerning the trachomatous contamination of young European children in the colonies. (Au sujet de la contamination trachomateuse des jeunes enfants européens aux colonies).** *Rev. Internat. du Trach.*, January, 1932.

(5) The importance of this reminder by **Motais** on the danger of allowing European children to be tended by Oriental servants who are or who may be infected with trachoma cannot be emphasised too strongly. Wherever possible the servants should be examined medically before they are allowed to come into any contact with European children. In trachoma countries all servants who come in contact with the children of the house should have some antiseptic drops instilled into their conjunctival sacs daily, and also the children, such as a solution of zinc sulphate 0·25 per cent.

A. F. MACCALLAN.

(6) **Favaloro (Catania). — Some little known mild forms of trachoma. (Sulle forme attenuate e poco note del tracoma cicatriciale).** *Ann. di Ottal. e La Clin. Ocul.*, January, 1932.

(6) **Favaloro** describes a condition, seen with the slit-lamp, in certain mild forms of trachoma in which diagnosis was uncertain. It takes the form of a network of cicatricial bands enclosing spaces which appear optically empty. This network is situated in the more superficial layers of the conjunctiva but in front of the large vessels. Sometimes this appearance could be seen over the whole conjunctiva but more commonly it was limited, often to the internal and external angles, sometimes to the region of the fornix.

In trachoma, where the cicatricial changes are visible to the naked eye, the slit-lamp does not show the same regular network, but the cicatrices are specially marked in the sub-tarsal sulcus, a region which is generally unaffected in the mild cases which Favaloro is considering in this paper.

HAROLD GRIMSDALE.

(7) **Morax (Paris) and Jeandelize (Nancy).—Difficulty in the diagnosis of papillary trachoma. (Difficulté du diagnostic du trachome papillaire).** *Rev. Internat. du Trach.*, July, 1931.

(7) **Jeandelize** saw a patient in December, 1929, who had a slight conjunctivitis of the right eye with a little discharge. The patient lived in a district where trachoma is rare. Examination of the discharge showed the absence of micro-organisms.

A week later there was some oedema of the eyelids and the appearance of follicles gave the picture of a swimming bath conjunctivitis. But the patient did not frequent swimming baths. The condition became more acute during the next ten days.

Morax saw the patient in January, 1930. There was very little discharge. There was a papillary condition of the upper tarsal conjunctiva, and also of both upper and lower fornices. An examination of the conjunctival secretion and of scrapings of the conjunctiva showed a lymphocytosis, but no micro-organisms and no epithelial cell inclusions.

The patient was seen from time to time by Jeandelize during 1930, without any particular change in the condition. In November, 1930, the left eye, hitherto unaffected, exhibited the same appearance as the right eye. Morax then found cell inclusions in small quantity. The treatment carried out by Jeandelize was a weekly massage with a tampon of cotton wool soaked in a one in a thousand solution of oxycyanide of mercury, while the patient instilled frequently copper sulphate solution, 1·5 per cent., soon replaced by a copper sulphate ointment. By the beginning of March, 1931, the condition was cured leaving the conjunctiva of the left eye intact, but a very slight cicatricial condition of the conjunctiva of the right eye.

The authors consider the case worth recording as the diagnosis was at first uncertain, and as a satisfactory cure was obtained in a comparatively short time. It would have been interesting to have made a slit-lamp examination to note the presence or absence of pannus at any time during the evolution of the cure.

A. F. MACCALLAN.

(8) **Lumbroso and van Sant (Tunis).—New bacterial cultures isolated in North African trachoma following the technique of Noguchi. (Nouvelles souches bactériennes isolées de trachomateux nord-africains en suivant le technique de Noguchi).** *Arch. de l'Institut Pasteur de Tunis,* June, 1931.

Nicolle and Lumbroso (Tunis).—The bacterium granulosis in its relation to the aetiology of trachoma. (Le bacterium granulosis dans ses rapports avec l'étiologie du trachome). *Arch. de l'Institut Pasteur de Tunis, June,* 1931.

Nicolle and Lumbroso (Tunis).—Immunity against an experimental re-inoculation with the virus of trachoma after a natural and cured attack of the disease. (Immunité consécutive à une atteinte naturelle et guérie de trachome contre une réinoculation expérimentale de virus). *Arch. de l'Institut Pasteur,* June, 1931.

(8) In a research which necessitated 2,000 cultures made from 29 cases of active trachoma the authors have never found the bacterium granulosis. They found, however, three types of organisms which bore a varying degree of relationship to Noguchi's organism.

Cultures of the bacterium granulosis derived from strains isolated by Noguchi and by Olitsky were found to have no pathogenic effect in man when injected under the conjunctiva or into the blood stream. The distinguished authors note that their cultures were old and may have lost some of their virulence.

Intravenous inoculation with living cultures of the bacterium granulosis, as isolated by Olitsky, does not give any protection against a later inoculation with trachoma virus.

A first attack of natural trachoma which has left as a result a completely cicatricial condition of the conjunctiva, (Trachoma stage IV) puts the subject entirely out of reach of any subsequent experimental re-inoculation with the virus, of any sort or kind whatsoever.

A. F. MACCALLAN.

(9) **Pergola (Cagliari).—The treatment of trachoma and its corneal complications. (Sulla terapia del tracoma e delle sue complicanze corneali).** *Lett. Oftal.*, April, 1932.

(9) **Pergola** has treated a number of cases of trachoma with Angelucci's "Tracholysin" and has found it of much value. It is given either subconjunctivally or dropped into the conjunctival sac.

As might be expected, the effects are more marked in cases of active trachoma; in the cicatricial stage with old pannus, there is little betterment.

HAROLD GRIMSDALE.

II.—CONJUNCTIVA

(1) **Morax (Paris).—Follicullar conjunctivitis of bathing. (Conjunctivite folliculaire de piscine).** *Rev. Internat. du Trach.*, January, 1932.

(1) It is stated by some authors that bathing-pool conjunctivitis is a condition in which the epithelial inclusions of Halberstaedter and Prowaczek may always be found. **Morax** has found these in one case of bathing-pool conjunctivitis, though in small numbers, but he has also found them in a case of follicular conjunctivitis which had no history of having visited a swimming bath. The author criticises the conception of genital trachoma advanced by Lindner.

A. F. MACCALLAN.

(2) **Casini (Modena). — Spring catarrh and the seasonal modifications of eosinophilia. (Congiuntivite primaverile e modificazioni stagion le della eosinofilia ematica).** *Arch. di Ottal.*, May, 1932.

(2) **Casini** has examined the blood count in six cases of spring catarrh for several successive months; he has found a constant slight increase of the eosinophils during the late spring and early summer.

Exposure to the ultra-violet rays has very little influence on the eosinophil count but the lymphocytes in all cases increased considerably at the expense of the neutrophils.

HAROLD GRIMSDALE.

III.—MISCELLANEOUS

(1) **Davis, F. A. (Madison, Wisconsin).—Tribromethanol as an anaesthetic in eye surgery. (Tribromethyl-Alcohol=Avertin).** *Trans. Amer. Ophthal. Soc.*, Vol. XXIX, p. 47, 1931.

(1) **Davis** has given an account of the history and a survey of the literature and case reports of avertin anaesthesia in British, American and Continental clinics.

Avertin is a white crystalline substance and is prepared by the reduction of bromal hydrate by alcohol in the presence of aluminium ethoxide as a catalyst. It is soluble in water heated to 45° C. but at higher temperatures becomes toxic.

The dosage is 0·1 gm. per kilogram of body weight and is given as a freshly prepared 3 per cent. solution in distilled water at body temperature.

The preparation of the patient consists in the administration of a simple enema 4·5 hours before operation and the injection of morphine grs. 1/6 and scopolamine grs. 1/150 1·5 hours before operation.

The avertin is injected slowly from a large glass syringe through a fine French catheter passed 4 inches into the rectum. The solution is warmed to 40° C., and in order to retain the fluid the buttocks are strapped together with adhesive plaster after removing the catheter. An alternative is the intravenous route, sudden sleep and deep coma being induced in 15-20 minutes.

There is a summary of the results of avertin anaesthesia used in 90 operations in the Eye Clinic of the University of Wisconsin General Hospital, 48 being intra-ocular and 42 extra-ocular. The age of the patients varied from 6 months to 87 years; 56 per cent. were males and 44 per cent. females. The avertin was administered

at times varying from 5 to 56 minutes before operation, the average being 24 minutes. The duration of the operations was from 1 minute to 1 hour and 10 minutes, the average being 29 minutes.

Observations on the intra-ocular pressure were made and a fall was noted in 38 out of 47 cases. The range of fall was from 2 to 60 mm. of mercury the average being 13 mm. of mercury. No change was present in 5 cases and there was a rise of from 2-13 mm. of mercury in 5 cases associated with respiratory embarrassment. The lowered venous pressure and the diminished respiratory excursions are probably the cause of the lowered tension.

There was a fall of blood pressure in 35 out of 54 cases and a rise in 13. The average fall was 30 mm. of mercury. The venous pressure, taken by the direct method, also showed a fall.

The period of narcosis varied from 15 minutes to 15 hours. One third of the cases required a supplementary general anaesthetic and practically all these were young subjects under 25 years of age.

Anaesthesia was full in 70 per cent. It is important to use a preliminary sedative in strong vigorous men.

The dose used is 0·1 gram. per kilogram of body weight; the smallest dose was 22 c.c. of a 3 per cent. solution and the largest 315 c.c., the average being 145 c.c.

Vomiting occurred in 16 per cent. of cases but it is uncertain whether this was not due to a preliminary injection of morphia or the use of general anaesthesia to supplement the action of the avertin. Avertin used alone rarely produces vomiting.

Observations were made on the character of the awakening: 75 per cent. were quiet and the remainder restless. Backache was complained of in 10 per cent. of the patients, and in two cases there was severe asphyxia.

During operation the eyes were motionless but rotated slightly upwards, the pupil contracted but reacting to light. The tone of the extra-ocular muscles is reduced, the tissues pale, the intra-ocular tension lowered, bleeding lessened, and the lens and vitreous appear to be displaced backwards. In performing cataract extraction double fixation of the eye is sometimes required.

The advantages of this anaesthetic are the rapid and pleasant induction in bed, amnesia, post-operative sleep, lowered intra-ocular tension in cases where it has been raised, diminished bleeding and less risk of intra-ocular haemorrhage, and control of the patient during operation.

The disadvantages are the uncertain accuracy of dosage, asphyxia and lowered muscle tone. The insertion of a metal airway and the administration of oxygen do much to combat asphyxia.

Thirty references are given at the end of this paper and the author concludes that avertin is a valuable adjunct in ophthalmic operations in selected cases.

H. B. STALLARD.

(2) **Rabkin, E. B. (Kharkdow, Ukraine).—Post-operative care without bandages.** *Arch. of Ophthal.*, June, 1932.

(2) Rabkin was able to note the effect of the open method of post-operative treatment at Professor Hirschmann's Ophthalmic Institute in Kharkow. The cases numbered 127, and comprised cataract extractions, iridectomies, etc. No complications occurred as a result of using the open method, and the post-operative stay in hospital was shorter than when bandages were used. The method is not advised in cases where the wound is gaping, where haemorrhage is present, or when there is glaucoma with high tension. Also in cases of squint operations, where it is desired to immobilise the eyes, bandages are of course advisable. The "open method" is not described in detail, but it would seem to consist in placing a single layer of gauze over the eyes and tying it posteriorly. The layer of gauze is used not for protection but merely to allay the anxiety the patient might feel if the eyes were left completely uncovered.

F. A. W-N.

(3) **Ishikawa, F. (Sendai).—Experimental glaucoma in the dog with special reference to changes in the optic nerve. (Experimentelles Glaukom beim Hunde mit besonderer Rücksicht auf Sehnervenerkrankungen).** *Arch. f. Ophthal.*, Vol. CXXIV, p. 387.

(3) By the injection of suspensions of hair-pigment into the anterior chamber Ishikawa produced in dogs a clinical picture similar to that of acute glaucoma in man (*viz.* sudden rise in tension and marked inflammatory symptoms), together with a rapidly increasing hydrophthalmic enlargement of the eyeball, the sclerotic being stretched throughout its circumference. If the tension remained high for some time, the sclerotic usually showed some degree of compensatory hypertrophy.

He discusses the changes in the parenchyma and fixed cells of the cornea that account for the diffuse corneal opacity, and the degenerative changes in the retina, which are regarded as not specific for experimental glaucoma.

With regard to the main part of this research, which was to decide whether there was any connection between the spaces of Schnabel in the optic nerve and the glaucomatous excavation of the optic disc, the author found these spaces most marked in the intralaminar portion of the nerve, less so in the retrolaminar. The prelaminar portion usually shows cavernous degeneration at a much later stage, and then only to a slight extent.

It seems probable that glaucomatous atrophy of the optic nerve with a varying degree of proliferation of the glia may develop

even without a preceding cavernous degeneration of the nerve fibres.

The spaces of Schnabel are almost invariably microscopically small, and even by fusing together would hardly ever attain such a size as later to cause a contraction of the remaining glia and connective tissue.

In none of the cases was there any sign of a transition of these spaces into a real glaucomatous excavation of the optic papilla; it is reasonable to suppose that with the advancing optic atrophy they gradually become fewer and finally disappear owing to the proliferation of the glia.

The essential factor in the development of the excavation in the disc is the pathological rise in the tension.

Cavernous degeneration of the optic nerve in glaucoma is, in his opinion, brought about by the effect of the backward displacement of the lamina cribrosa on the optic nerve fibres; these fibres, which are in close union with the meshwork of the glial portion of the lamina, undergo great stretching, squeezing, and finally rupture, and hence the development of these spaces is most pronounced in the intralaminar portion of the nerve.

THOS. SNOWBALL.

(4) **Accardi and Fontana (Palermo).—Effect of vital colouring on the intra-ocular tension, the diameter of the pupil, the albuminous content and refractive index of the aqueous humour. (Effetti della colorazione vitale sulla tensione endoculare, diametro pupillare, tasso albiminoideo e indice di rifrazione dell' umore acqueo).** *Boll. d'Ocul.*, January, 1932.

(4) In their study of the reticulo-endothelial system of the eye, **Accardi** and **Fontana** have been naturally led to consider the possible importance of the system, which makes such a large part of the uveal tract, in the production of the aqueous humour.

They have no doubt that the injection of vital dyes, colloid metals and other such bodies, during life, affords one of the best means at our disposal of examining the functions of this system. They have followed the changes of intra-ocular tension in rabbits in which these injections have been made. They have found in all cases an increase of the pressure together with an increase of the albuminoid content and of the refractive index of the aqueous. Since the same results followed the injections of different substances and different amounts of the same substance, they conclude that partial physiological block of the system plays an important part in the production of these phenomena.

HAROLD GRIMSDALE.

BOOK NOTICE

The Extra Pharmacopoeia. Revised by W. HARRISON MARTINDALE, PH.D., F.C.S. 20th Edition. Vol. I. Foolscap 8vo. Pp. 48+1,216. London: H. K. Lewis & Co., Limited. 1932. Price (in Great Britain), 27/6 net.

Martindale and Westcott's Extra Pharmacopoeia is so well known that no words of recommendation are necessary. It is an indispensable book to the physician, and we hold it to be above criticism.

Since the publication of the first vol. of the 19th edition in 1928, new editions of official pharmacopoeias have appeared in Italy (1929), Belgium and Spain (1930). These, and the new edition of the B.P. (1932), have undergone abstraction for the present volume. A useful synopsis of the *principal* additions and changes in the B.P. (1932) is appended as well as the handy tables of weights and measures, thermometric equivalents and atomic weights. The main part of the work is arranged alphabetically from "acacia green" to "zinc." There is also a copious list of supplementary drugs, sections on vaccines and antitoxins, on organo-therapy, a schedule of poisons, a summary of the Dangerous Drugs Acts and a therapeutic index of diseases.

It is interesting to note that this is the jubilee year of publication, the first volune by W. Martindale and Dr. Wynn Westcott having appeared in 1883. After Mr. Martindale's death in 1902, his son, Mr. W. Harrison Martindale, collaborated with Dr. Wynn Westcott till the latter's death in 1925. Since that date he has shouldered the bulk of the work. He deserves the thanks and congratulations not only of his own profession but also of all medical men.

OBITUARY

ANDREW FREELAND FERGUS, LL.D., F.R.S.E.

THE passing of Andrew Freeland Fergus on October 24 last, leaves a gap in the friendships of the older generation of medical men, more especially in Glasgow and the West of Scotland. It surely is an unusual circumstance that a man should be a distinguished ophthalmologist, a teacher of Physics, and also an expert navigator and skilled seaman. Nor can it often happen that he should occupy the Presidential chair of an important public body, a chair which his father had occupied not so many years before, and that he should be followed a few years later in the same honourable position by his younger brother.

Freeland Fergus, known to all as "F.F.," was the eldest surviving son of the late Dr. Andrew Fergus, a distinguished practitioner in Glasgow who was twice president of the Faculty of Physicians and Surgeons between the years 1874 and 1886. Freeland was in his 75th year when he died at his home in Rothesay, to which place he had retired after an active life of many interests, professional and social. He had held the presidency of a number of public bodies, of which the most important medically was that of the Royal Faculty of Physicians and Surgeons of Glasgow. This position Fergus held with great acceptance from 1918 to 1921. Such activities were outside his special work. Ophthalmology claimed Fergus's attention early. He graduated M.B., C.M. at Glasgow University in 1881, M.D. 1891, having, prior to graduation, studied Physics in the laboratory of Sir William Thomson (Lord Kelvin). This gave him a leaning towards ophthalmology and he went to study at Paris and at Utrecht, in which latter place he came under the influence of Snellen, a fact which, later, was apparent in his teaching. Returning to Glasgow he became Lecturer on Physics at the Anderson College of Medicine, worked in the medical wards of the Royal Infirmary, and afterwards became ophthalmic surgeon to that Institution. Finally, he established his life's professional work when he joined the staff of the Glasgow Eye Infirmary, from which institution he retired, in 1918, under the age limit, being at the time the senior of the surgeons, and having served as Surgeon for about 28 years.

Fergus was an excellent teacher, no doubt somewhat dogmatic, though none the worse on that account. The writer, who was one of his pupils, remembers with pleasure the informal teaching evenings at his private house, where, by the fireside, such subjects as the *pros* and *cons* of enucleation would be discussed. On the Eye Infirmary he has left his mark as one who fought hard for improvements both in the management of the Infirmary and in surgical technique. His criticisms during such conflicts were not always very temperate nor always quite merited, for his habit of mind leaned somewhat towards exaggeration. Nevertheless, it is probable that modern improvements are due in considerable degree to his constant insistence on their necessity.

Fergus became a member of the Ophthalmological Society of the United Kingdom so long ago as 1888. He served on the Council from 1905 to 1908. In 1926 he was appointed a medical referee in ophthalmic cases under the Workmen's Compensation Act and, as a result of this and his previous experience as a witness, he dealt vigorously in speech and in print with the question of visual acuteness and working ability especially in cases of miners' nystagmus. In such cases his opinion was considered of great value. Indeed the question of working capacity had interested him ten years earlier

when, as Major Fergus, he worked hard and systematically in the examination of recruits at Stobhill Hospital. Lastly, in connection with Fergus's public activities, one may perhaps consider that his recent labours in connection with the Welfare of the Blind in Scotland are to be regarded as at least equal to any of his other services.

This is not the occasion on which to particularise his numerous writings on various other ophthalmic subjects: they include articles on squint, trephining for glaucoma, colour vision in seamen and cataract extraction, particularly in connection with pre-operative cultures. His papers will be found scattered through the ophthalmological and general medical journals of the last forty years. Early in his career he translated Eduard Meyer's treatise and, later on, published small volumes of his own, "Elementary Ophthalmic Optics" and two editions of "The Ophthalmoscope and how to use it." That career may be said to have been crowned by the bestowal in 1921 of the honorary degree of LL.D. by the University of Glasgow.

Fergus was essentially a sociable man who made many friends among his professional brethren and among his patients. He was never married. He was a *raconteur* and told stories—many of them handed down by his father—with a zest which was invariably accompanied by his own infectious laughter. His favourite recreation was yachting, in which sport he was his own pilot.

HENRY AMBROSE LEDIARD, M.D., F.R.C.S.

THE death of Dr. Lediard, of Carlisle on October 31, within a few days of his 85th birthday, removes one of the rapidly diminishing band of original members of the Ophthalmological Society of the United Kingdom. Though not a prolific contributor to the *Transactions* he was the author of at least four communications of interest. Immediately following Sir William Bowman's inaugural address in the first volume will be found a short report by Lediard on a case of epithelioma of the orbit and eyeball, with the history of a previous growth on the lower lip. Among his other ophthalmic papers may be noted those on an orbital exostosis, an orbital dermoid, and a choroidal sarcoma with metastases.

A Gloucestershire man by birth, he was the son of the late Samuel Lediard, of Cirencester, solicitor. Born on November 12, 1847, he was educated at Cheltenham and Edinburgh. He took the M.B. in 1870, and proceeded M.D. in 1875 and F.R.C.S.Eng. in 1876. After serving as house surgeon and house physician to the Edinburgh Royal Infirmary for a couple of years he came to London where he held the post of medical superintendent of the

Central Sick Asylum for some years. Rather more than 50 years ago he joined Dr. W. B. Page in practice in Carlisle. He was surgeon to the Cumberland Infirmary for half-a-century and a Justice of the Peace for the City of Carlisle.

Dr. Lediard was active till the end of his long life for he was in London in September last. Much sympathy will be felt for his widow and surviving daughter, while many in the North Country will mourn the loss of a distinguished Cumbrian and one of the kindest hearted men who ever lived.

CORRESPONDENCE

THE CAUSATION OF MYOPIA

To the Editors of THE BRITISH JOURNAL OF OPHTHALMOLOGY.

SIR,—In the *British Journal of Ophthalmology* for August, 1932, there appeared an article by Dr. Spencer Walker on the "Causation of Myopia," in which it was suggested that defective calcium metabolism might account for the posterior staphyloma. Whether this be correct or not, there are certain facts to be considered which may be relevant. Long since, careful work, at first in Switzerland, showed that improvements in lighting and school hygiene did not yield all the success anticipated. Subsequently Dr. Maddox made the valuable suggestion that we should endeavour, in effect, to divert myopic people from literary to technical or outdoor occupations and so affect the general condition of the subject. This procedure is valuable but very difficult to apply in practice. In my experience the myopic child wants to read and dislikes technical work.

Dr. Walker's suggestion recalls the work done by Mr. Lang and myself on the refraction of the eyes of mammalia, see *Ophthalmic Hospital Reports*, Vol. XI, Part 2. We never found, with the possible exception of two monkeys, any wild animal whose eyes were myopic, but we found a number of completely or partly domesticated animals which were myopic. As the only mammals, apart from man, which accommodate to any appreciable extent are monkeys it is clear that close near vision could not account for the myopia in mammals generally, and as monkeys cannot read that factor is excluded.

There is, therefore, every reason to think that some condition of malnutrition is a factor, as we indicated at that time. But it is difficult to understand precisely why the children of myopic parents so often become myopic. Comparative anatomy again furnishes us with an indication of the direction in which an explanation may ultimately be found.

The following are the results we obtained after a lengthy investigation. Atropine was used for nearly all the smaller animals. Among the animals examined myopia, including mixed astigmatism, was found as follows:—

Rabbits	6	in 52 eyes.
Guinea pigs	5	„ 26 „
Mice	None	„ 10 „
White rats (half wild) . .	1	„ 10 „
Cows	1	„ 10 „
Horses	None	„ 6 „
Cats	4	„ 14 „
Dogs	2	„ 6 „

The myopia was under 2 D. except in guinea pigs where it was much higher in degree. As many of the eyes were emmetropic by retinoscopy there may have been some additional instances of slight myopia.

The following wild animals were examined:—3 deer, 1 jackal, 1 peccary, 1 jeannette cat, 1 paradoxus cat, 1 Australian native cat, 1 mongoose, 2 hyenas, 1 opossum, 1 porcupine. None of these were myopic. Of eleven monkeys two were myopic but we were unable to ascertain how long the monkeys had been in captivity.

From these facts there emerges one definite conclusion, that the prolonged use of eyes for near work is not by any means the chief factor in causation, though it may well be a powerful source of aggravation.

I am, etc.,

JAMES W. BARRETT.

MELBOURNE,
September, 1932.

NOTES

Appointment

Mr. FRANK W. LAW has been elected Assistant Surgeon to the Central London Ophthalmic Hospital.

* * * *

Midland Ophthalmological Society

THE officers for the current year are as follows: *President:* Norman Pike; *Vice-President:* B. H. St. Clair Roberts; *Treasurer:* T. Ashdown Carr; *Secretaries:* T. Harrison Butler and N. P. R. Galloway.

Corrigendum

WE have received a letter from Mr. Alex. S. Cameron, of Chicago, referring to a paper in our issue of April, 1932, p. 225, which describes a device for preventing glare in electric ophthalmoscopes.

He writes: "It may interest you to learn that I have in my extensive collection of various types of ophthalmoscopes, an illuminating ophthalmoscope with a tube projecting through the mirror opening, which was patented in January, 1904—28 years ago. This instrument was made by the late Mr. de Zeng in Camden, New Jersey."

FUTURE ARRANGEMENTS

1932

December 6.—Midland Ophthalmological Society, at Birmingham and Midland Eye Hospital.

December 9.—Royal Society of Medicine, Section of Ophthalmology (Clinical Meeting).

December 9.—North of England Ophthalmological Society, at Leeds.

1933

January 13.—Royal Society of Medicine, Section of Ophthalmology.

January 27.—Midland Ophthalmological Society, at Nottingham and Midland Eye Hospital.

February 3.—North of England Ophthalmological Society, at Newcastle-on-Tyne.

February 10.—Royal Society of Medicine, Section of Ophthalmology.

March 3.—North of England Ophthalmological Society, at Liverpool.

March 10.—Royal Society of Medicine, Section of Ophthalmology Clinical Meeting).

March 31.—North of England Ophthalmological Society, at Sheffield.

April 4.—Midland Ophthalmological Society, at Oxford Eye Hospital.

April 17-21.—XIV International Ophthalmological Congress, at Madrid.

May 11-13.—Ophthalmological Society of the United Kingdom, Annual Congress, at the Royal Society of Medicine.

May 26.—Midland Ophthalmological Society, at Gloucester Royal Infirmary.

June 9.—Royal Society of Medicine, Section of Ophthalmology (Annual Meeting).

July 5-8.—Oxford Ophthalmological Congress, at Oxford.
October 6.—Midland Ophthalmological Society, Annual Meeting, at Birmingham and Midland Eye Hospital.
December 5.—Midland Ophthalmological Society, at Birmingham and Midland Eye Hospital.

CONTEMPORARY OPHTHALMIC LITERATURE

American Journal of Ophthalmology. *October, 1932.*

JACKSON. The eyes of school children.
CASTROVIEJO. Keratoplasty.
COBB. Light-sense.
HILDRETH. Ultra-violet light in ophthalmology.
COBLENTZ. The transmissive properties of tinted lenses.
CORDES and HORNER. Contusion of the eyeball with delayed intraocular hemorrhage.
VON DER HEYDT. The fitting of contact glasses.
STINE. Optic neuritis and optic atrophy due to thallium poisoning following the prolonged use of Koremlu cream.
LEBENSOHN. Radiational cataract.

Archives of Ophthalmology. *October, 1932.*

HOLTH. Vertical limbal or oblique extra-limbal incision for iridencleisis in glaucoma: the efficiency of iridectomies before 1884.
GIFFORD. The Machek operation for ptosis.
ABRAHAM, S. V. Chorio-retinitis juxta-papillaris (Jensen): First histologic report.
GUNDERSEN. Germicidal effect of ultra-violet rays on the virus of herpes. Experimental studies.
DUANE. The monocular movements.
SPAETH. Iris inclusion operation in the eye of the rabbit. A histologic study.
RONES. Development of the human cornea.

Annales d'Oculistique. *September, 1932.*

Charles Abadie (1842-1932).
SIEGRIST. The pathogenesis and medical treatment (non-operative) of senile cataract.
JUNÈS. The operation of choice in trachomatous entropion of the upper lid. Low tarsotomy and horizontal sutures.
JOHN EVANS. The application of angio-scotometry to the study of sinus infections of nasal origin.
DELORD and VIALLEFONT. On a case of intermittent exophthalmos.

Klinische Monatsblätter für Augenheilkunde. *October, 1932.*

EIDENBENZ. The macula lutea and its neighbourhood in the light of earlier methods of red-free ophthalmoscopy.
——— "Red-free" or "green" light.
GNAD. On the success of Röntgen and Bucky ray treatment in interstitial keratitis.
KNAPP and BÄCHTIGER. Observations on the question of the effect of light on the eyes in electric welding.
STOCKER. On the value of the bone-free radiographs in the discovery and localisation of intra-ocular foreign bodies.
BARTELS. Operative cure of detached retina in spite of co-existing miners' nystagmus.

VOM HOFE. *Atypical coloboma of the iris, partial aniridia and aplasia of both foveae.*

BUSACCA. The connective tissue groundwork of trachomatous pannus.

MIKLOS. The growth of bacteria in lens-containing nutritive media.

SUGITA. On a perithelioma of the deep nasal part of the orbit.

PUSCARIU. Mixed tumour of the upper lid.

NAGY. On the inclusion bodies of trachoma and other affections of the conjunctiva.

WARSCHAWSKI. Experiences with trachoma in Baku.

FAZAKAS. On the topography of the accessory sinuses with particular regard to their relationship to diseases of the optic nerve.

Bollettino d'Oculistica. *September, 1932.*

SGROSSO. On the pigmentogenous power of the uveal membrane in albinos.

MARGOTTA. On the increased weight of the lens in accommodation.

FEDERICI. *Experimental researches into the potentialities of* Novocaine and Phenol.

BENCINI. Corneal ulcer from "paracoli."

FONZI. The conjunctival plastic in wounds and ulcers.

GIANNANTONI. A rare case of ocular injury.

Lettura Oftalmologica. *September, 1932.*

GIANNANTONI. The total chlorates of the blood in glaucoma.

BAQUIS. Recurrent vitreous haemorrhage of adolescents.

POSSENTI. *Clinical and anatomico-pathological study of a case of xanthomatosis* bulbi.

Anales de la Sociedad Mexicana de Oftalmologia y Oto-Rino-Laringologia, *October-November-December, 1931.*

ESPINO. Note on early blindness in infancy.

ESTRADA. Cyst of the superior lacrimal canaliculus.

CHAVIRA. Relation between the intra-ocular tension and the general arterial tension.

TORROELLA. Note on the observation of living micro-filarias in the human eye.

HAMBURGER. Progress in the investigation and treatment of glaucoma.

Archivos de Oftalmologia Hispano-Americanos. *October, 1932.*

DE LA TORRE. Biomicroscopy of the lens.

MARQUEZ *Ocular movements of direction and convergence.*

LLORCA. Contribution to the origin and the nature of the vitreous.

Boletin de Informacion Oftalmologica. *July-August, 1932.*

SILVA. Diabetic retinitis.

DAMEL. Acquired anophthalmia and permanent disfiguration.

BELGERI and ARANA. A case of papilloedema with exophthalmia.

DAMEL. Hysteria in ophthalmology.

Revista Oto-Neuro-Oftalmologica y de Cirujia Neurologica Sud-Americana. *October, 1932.*

MAYER. On the radiological examination of tumours of the cerebello-pontine angle.

MONIZ. New aspects of cerebral angiography.

PAVIA and PORTELA. Bilateral absence of the lens. Microphthalmia and monocular hyalitis. Endocrine factor. General toxi-infection.

GEORGE ST

24 WIGMO

Telephone

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